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**THE CONNECTICUT
POMOLOGICAL SOCIETY**

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JOSEPH H. PUTNAM, Litchfield.
President Connecticut Pomological Society, 1907.

REPORT
OF THE
*Connecticut
Pomological
Society*

For the Year 1907

*With Proceedings of the
Seventeenth Annual Meeting*

1908



PUBLISHED BY
THE CONNECTICUT POMOLOGICAL SOCIETY.
1908.

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OFFICERS
OF THE
Connecticut Pomological Society
FOR 1908

President.

CHARLES L. GOLD, West Cornwall.

Vice-President.

ELIJAH ROGERS, Southington.

Secretary.

HENRY C. C. MILES, Milford.

Treasurer.

ORRIN GILBERT, Middletown.

County Vice-Presidents.

Hartford—STANCLIFF HALE, South Glastonbury.

New Haven—NORMAN S. PLATT, New Haven.

Fairfield—J. C. JACKSON, Norwalk.

Litchfield—CHAS. S. PHELPS, Chapinville.

Middlesex—CHAS. E. LYMAN, Middlefield.

New London—CHAS. A. GRAY, Norwich.

Windham—EVERETT E. BROWN, Pomfret Center.

Tolland—CLARENCE H. SAVAGE, Storrs.

Standing Committees.

Legislation.

J. H. HALE, South Glastonbury.

J. C. EDDY, Simsbury.

E. ROGERS, Southington.

Membership.

J. H. PUTNAM, Litchfield.

DUDLEY WELLS, 2d, Wethersfield.

A. T. HENRY, Wallingford.

Injurious Insects.

DR. W. E. BRITTON, New Haven.

C. D. JARVIS, Storrs.

E. M. IVES, Meriden.

New Fruits.

JOHN R. BARNES, Yalesville.

GEO. C. COMSTOCK, Norwalk.

FRANK N. PLATT, Milford.

Finance.

J. C. EDDY, Simsbury.

J. M. HUBBARD, Middletown.

HARVEY JEWELL, Cromwell.

Exhibitions.

L. C. ROOT, Farmington.

PROF. A. G. GULLEY, Storrs.

GEO. H. HALE, So. Glastonbury.

Fungous Diseases.

DR. G. P. CLINTON, New Haven.

OSCAR F. ATWOOD, Brooklyn.

WM. H. OLCOTT, So. Manchester.

Markets and Transportation.

J. NORRIS BARNES, Yalesville.

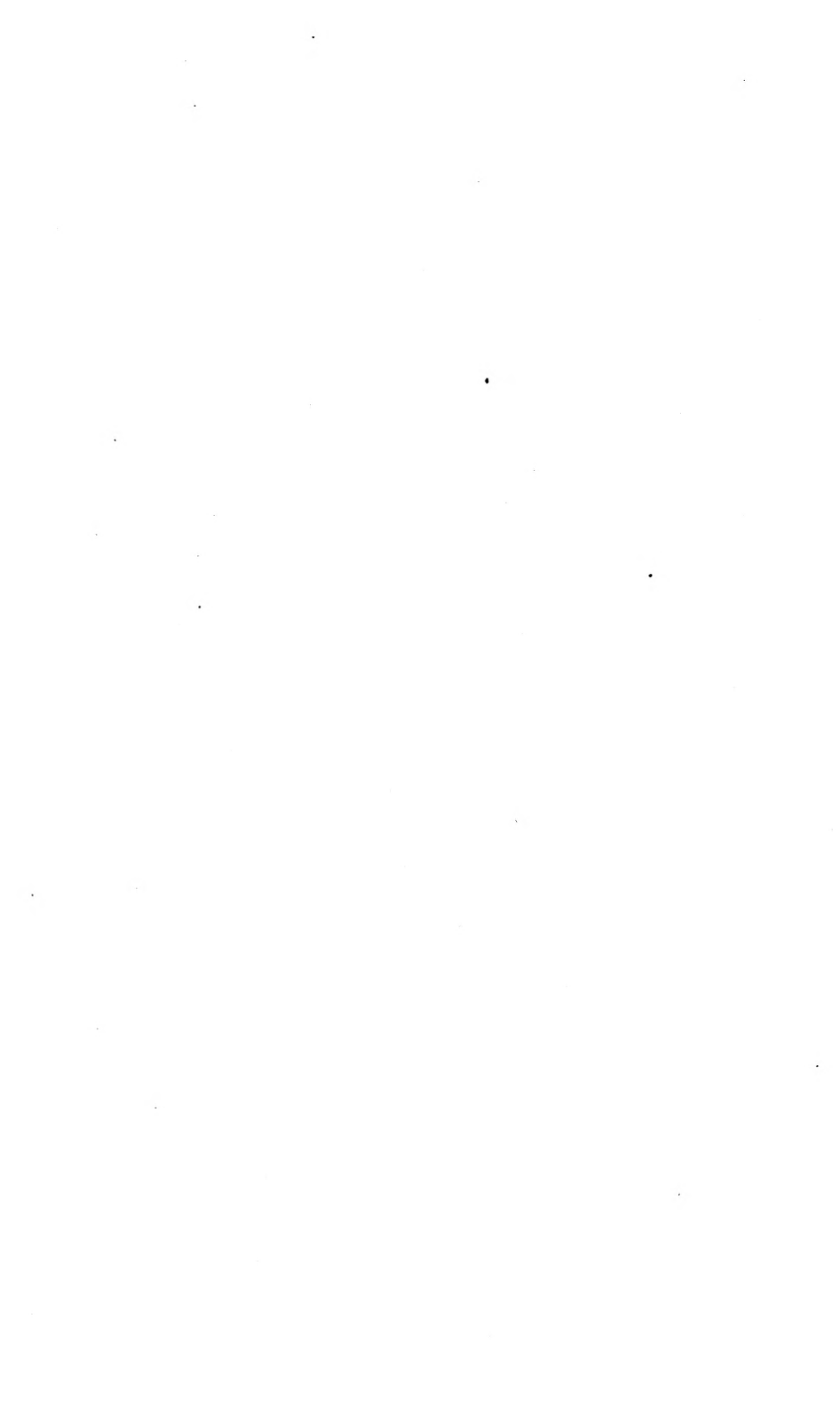
C. E. LYMAN, Middlefield.

A. B. COOK, Farmington.

Auditors.

GEO. W. STAPLES, Hartford.

ANDREW KINGSBURY, Rockville.



CONTENTS.

PROCEEDINGS :	PAGE
President's Address	1
Secretary's Report	6
Treasurer's Report	15
Reports of Standing Committees:	
on Membership	22
on Legislation	23
on Injurious Insects	23
on Exhibitions	28
on Fungous Diseases	30
Is Legislation Needed to Secure Uniform Methods of Grading, Packing and Branding Fruits for Shipment? Dr. G. M. Twitchell and others	35
Discussion of the Question of Uniformity in Grading, Packing and Branding Fruits	44
Hardiness of the Peach. Prof. U. P. Hedrick	47
Some New Points on Peach Diseases. Prof. M. B. Waite....	59
The New Oil Emulsions for Treating the San Jose Scale. C. D. Jarvis	81
Eight Years' Experience with the San Jose Scale in Our Orchards. S. Seward Hopkins	98
Quality from the Grower's Standpoint. J. H. Hale	107
The Views of a Consumer. Mrs. Ella B. Kendrick	110
How to Reach the Consumer and Increase the Use of More and Better Fruit. H. W. Collingwood	115
Report of the Standing Committee on Markets and Transportation	126
Tillage vs. Sod-Mulch for the Apple Orchard. U. P. Hedrick.	135
Successful Western Methods of Grading and Packing Fancy Apples. Prof. L. B. Judson	153
The Election of Officers	160
Essentials for Success in the Growing and Marketing of Berries and Market-Garden Crops. H. M. Howard	163

	PAGE
Discussion of the Question List	80, 127, 158, 176
Resolutions	46, 126, 161, 162, 175
Report of the Special Committee on Fruit Exhibit, with List of Awards	178
Report of the Special Committee on Implement Exhibit.....	180
 PART TWO—A Brief Record of Field Meetings, Exhibitions and In- stitutes Held in 1907.	
Field Meetings, Summer of 1907	183
Field Meeting at Litchfield, July 2, 1907	184
Field Meeting at Farmington, August 7, 1907	187
Field Meeting at Coventry, September 3, 1907	190
Field Meeting at J. H. Hale's, South Glastonbury, Sept. 17, 1907.	191
The Tenth Annual Exhibition of Fruits, 1907	196
The Exhibit for the National Grange Meeting	200
Institute Work in 1907	200
Necrology	203
List of Members	209

Constitution and By-Laws of the Society

THE CONSTITUTION.

ARTICLE I.—The name of this Association shall be THE CONNECTICUT POMOLOGICAL SOCIETY.

ARTICLE II.—Its object shall be the advancement of the science and art of pomology, and the mutual improvement and business advantage of its members.

ARTICLE III.—Any person may become a member of this Society by paying into the treasury the sum of one dollar, and the membership shall cease at the end of the current year.

Any person may become a life member of this Society by the payment of the sum of ten dollars at one time. All moneys from life memberships to form a permanent investment fund of the Society.

ARTICLE IV.—Its officers shall consist of a President, First Vice-President, one Vice-President from each county in the State, a Secretary and a Treasurer, to be elected annually by ballot, to hold office for one year, or until their successors are duly elected.

The President, First Vice-President, Secretary and Treasurer shall constitute the Executive Committee of the Society.

ARTICLE V.—The Society shall hold its annual meeting during the month of February, the time and place to be decided by the Executive Committee, at which time the annual election of officers shall be held, various reports submitted and an exhibition and discussion of fruits take place; also other necessary business be transacted. Other meetings for special purposes may be arranged for and called by the Executive Committee whenever it is deemed advisable. Printed notice of each meeting to be sent to every member of this Society.

ARTICLE VI.—The following Standing Committees of three members each, on the following subjects, shall be appointed by the President, to hold during his term of office; the appointments to be announced at the annual meeting of the Society.

Business and Legislation,

Fungous Diseases,

Injurious Insects,

New Fruits,

Exhibitions,

Markets and Transportation,

Membership,

Two Auditors.

ARTICLE VII.—This Constitution may be amended by a vote of two-thirds of the members present at any annual meeting.

BY-LAWS.

ARTICLE I.—The President, Secretary, Treasurer and the chairman of each standing committee shall each present a report at the annual meeting of the Society.

ARTICLE II.—The President shall appoint annually two members to audit the accounts of the Secretary and Treasurer.

ARTICLE III.—The Treasurer shall pay out no money except on the written order of the President, countersigned by the Secretary.

ARTICLE IV.—All members whose memberships have not been renewed before the end of the current year, shall be notified of the fact previous to the removal of their names from the roll.

ARTICLE V.—It shall be the duty of the Executive Committee to arrange the programs for the meetings of the Society, to fill all vacancies which may occur in its officers between the annual meetings, and to have general management of the affairs of the Society.

ARTICLE VI.—It shall be the duty of the County Vice-Presidents to actively represent the Society in its various lines of work in their respective counties,—to arrange for at least one meeting of the Society in their county during the year, and to report to the Society from time to time the progress of the fruit growing industry in their respective sections of the state.

ARTICLE VII.—The Committee on Legislation shall inform themselves in regard to such laws as relate to the horticultural interests of the state, and bring the same to the attention of the Society and also the need of further legislation. And when so directed by the Society, shall cause to be introduced into the General Assembly such bills as may be deemed necessary, and to aid or oppose any bills introduced by others, which directly or indirectly affect the interests of the fruit-grower.

ARTICLE VIII.—The Committee on Membership, with the cooperation of the County Vice-Presidents, shall bring the work of the Society to the attention of fruit-growers, throughout the state, and, by such means as they deem best, strive to increase the membership.

ARTICLE IX.—The Committee on Exhibitions shall suggest from time to time such methods and improvements as may seem to them desirable in the conduct of the exhibitions of the Society, as well as fruit exhibitions throughout the state; and with the assistance of the Executive Committee shall arrange the premium lists, and have charge of all Exhibitions given by this Society.

ARTICLE X.—It shall be the duty of the Committees on Insects and Diseases to investigate in regard to the ravages of these enemies of fruit culture; and to suggest how best to combat them and prevent their spread; to answer all inquiries addressed to them by the members as far as possible, and, when necessary, promptly lay before the Society timely information on these subjects.

ARTICLE XI.—The Committee on New Fruits shall investigate and collect such information in relation to newly-introduced varieties of fruits as is possible, and report the same to the Society, with suggestions as to the value of the varieties for general cultivation.

ARTICLE XII.—The Committee on Markets and Transportation shall inform themselves as to the best methods of placing fruit products upon the market, and bring to the attention of the members of the Society this and any other information concerning profitable marketing.

ARTICLE XIII.—The Society will adopt the nomenclature of the American Pomological Society.

ARTICLE XIV.—These By-Laws may be amended by a majority vote of the members present at any regular meeting.

PROCEEDINGS
OF THE
Seventeenth Annual Meeting
OF THE
Connecticut
Pomological Society

PURSUANT to the provisions of the Constitution and in accordance with arrangements made by the Executive Committee, the 17th annual meeting of the Society was held in the city of Hartford, at Unity Hall, Feb. 5 and 6, 1908.

The opening session was called to order at 10.45 Wednesday morning, Feb. 5th, by the President, J. H. Putnam of Litchfield.

In spite of the fact that it was one of the coldest mornings of the winter, members of the Society and other fruit growers from all over the State were present in goodly numbers when the meeting opened, and during the forenoon later arrivals brought the attendance up to the usual high point of the opening-day crowd.

Immediately following the call to order, President Putnam delivered his annual address as follows:

President's Address.

Members of the Pomological Society and Friends:

Once more we have met to review together the work of the year, to exchange experience gained and knowledge acquired, to gather from all possible sources the latest and

best information that may assist us in solving the problems with which we are confronted, and to stimulate each other to a more eager and earnest pursuit of our calling. It is to such a gathering that I welcome you all most cordially, to this, the seventeenth annual meeting of the Connecticut Pomological Society.

For sixteen years this Society has been faithfully endeavoring to improve the quality of the Connecticut fruit and the condition of the Connecticut fruit grower. Since this Society was organized the growing of fruit has advanced with great strides in Connecticut. While the fruit of the Garden of Eden was one of the first products of which we have record, the fruit of the present day in kind and quality is chiefly a product of the last half century. It is only when manufactures and commerce divide the labors of an intelligent population, when the development of science gives us the key to nature's secrets, when the cultivation of the fine arts and the accumulation of wealth creates a refined taste, that the united application of art and science is manifested in the beautiful and luscious products of the expert fruit grower.

The would-be successful fruit grower of to-day must realize that he has to meet a demand for a fruit far superior in appearance and quality to what was required a few years ago. In this work he is confronted with greater difficulties with insects, pests and diseases; due largely to the increased amount and rapidity of transportation and the fact that the land has been longer in tilth. On the other hand, science has furnished him with means and methods of overcoming these difficulties, and has given him a knowledge of the requirements of soils, fertilizers, and culture needed to produce the largest yields and finest quality.

It is in disseminating this information that such societies as ours do their greatest good. Our work is largely educational and is carried on by these annual meetings, field meetings, institutes, exhibitions and publications.

The field meetings the past year formed one of the pleasanter and most profitable lines of work. I believe that demonstrations could be profitably substituted for some of our

speeches at these meetings. Let practical men demonstrate up-to-date methods of planting, pruning, propagating, thinning, picking and packing the fruit. These practical demonstrations in the field should furnish the best means for instruction in the latest methods.

In spite of short crops and discouraging prophecies we held two very creditable exhibitions. The annual at Berlin showed what can be done under adverse conditions, when the members are each willing to do what they are able, put their shoulders to the wheel and push. One encouraging feature was the large number of new exhibitors. A number of small exhibits is always preferable to a few large entries. It encourages competition, which means better fruit next time. It increases interest, for the exhibitor is bound to work for the success of the fair. The best way to learn what quality in fruit really is, is to send what you think the finest fruit on earth to an exhibition and get beaten. The Society made a creditable display of fruit at the capitol during the meeting of the National Grange. Some of the fruit from the show at Berlin was carried over for this display and was shown beside fruit from the same growers that had remained on the trees late. It showed plainly that the fruit increased from 20 to 30 per cent. in size, and fifty per cent. in quality, after the middle of September. I think I never before realized how much the fruit increases in size during the last few days it is left on the trees, and I feel sure that it will pay from the quantity alone, and certainly for the quality, to pick the trees of even the winter varieties of apples over twice.

Wishing a bunch of grapes to top out a fruit-piece at this exhibition, I visited some of the large fruit dealers of the city. I failed, as I had expected, to find a single bunch of Connecticut grown grapes. What I did not expect, however, was that I did not find a single first quality Connecticut grown apple or pear. That Connecticut growers had produced the goods was proved over at the capitol, where at the same time were exhibits of apples as handsome in appearance, and I believe better in quality, than the imported ones these dealers were offering at 90 cents per dozen. Some of our growers

were shipping their fruits to the South and West. If our best growers ship their fruit away, and market their culls together with the fruit from our poorer growers in our home market, how long will we have a reputation in our state for good fruit? Will it not pay us to cultivate our own markets more carefully?

I am beginning to wonder if we have not become so much absorbed in the education of the producer that we have neglected the education of the consumer. Most of them already realize that there are no other peaches or strawberries that equal Connecticut-grown. Let us not rest content until we have brought them to the point of believing, what we already know to be true, that no better pears, apples, or grapes can be grown than those produced on our Connecticut hillsides.

Our institute work is one of the most successful methods of reaching the small grower and farmer, bringing them in touch with our largest and most advanced growers. The effect of this work in improving the quality of the fruit grown cannot be estimated. Its results are cumulative, and will be appreciated more and more as the years go by.

The year as a whole has not been a prosperous one for our growers. Apples were a short crop and the peach crop was a complete failure excepting a few specially favored localities. Good prices have prevailed throughout, however, and I doubt not that most of our members will be able to find the dollar required for renewal of membership.

One result of the failure of the peach was to make a ready market for Japan plums at a remunerative price.

The peach yellows has been unusually prevalent the past season and has caused much anxiety to our growers. We hope this meeting may bring out some helpful suggestions.

Peach growers no longer fear the scale, but when it attacks the old forty-foot apple tree it becomes an entirely different proposition. The spread of the scale on shrubs and trees in the villages and cities, where the owners are not prepared to fight them, means much to the fruit grower. It will undoubtedly destroy many of the family apple trees, pear

trees, and currants in the gardens of our village and suburban sections. These trees at present represent a large part of our crop of early and fall varieties of apples and pears and have for years furnished their owners and their neighbors with their early and fall fruit. If these trees go, it will make a larger market for the orchardist for varieties that have formerly been unprofitable and planted chiefly by the amateur. I believe there was never a better time to plant early varieties of apples and pears and currants.

The problem of the scale and the old apple tree is a big one, and before it is solved I fear many of our old veterans will have surrendered.

The last legislature was favorable to our interests and gave us most of the legislation that the fruit growers asked.

It is a strange fact that men need to be compelled to use business methods that will insure their own interests. On our program is a subject for discussion concerning legislation requiring more uniform methods of packing and grading fruit for shipment. If all packers were reasonably honest in their business dealings there would be no need of such legislation. This is not a call for protection from the victims of sharp practices. It is the call of the producer and dealer to pass laws that will inspire confidence in the consumer that the package contains what it is said to contain. It is a call for every man to remember that the old proverb, "Honesty is the best policy," is not simply a sentimental saying, but that it is a fundamental law of all business. When the business man, in whatever walk of life, forgets this, he sacrifices that most important of all elements to success, public confidence. Our largest business men, leading public officials and greatest financiers are having this hammered home to them with tremendous force at the present time. Everywhere is the call for laws to enforce that ordinary business honesty that it is in the interests of the business men themselves to observe. And so we are about to discuss laws that will compel the shrewd Yankee fruit grower to pack his fruit and mark it in a manner we would expect ordinary horse sense would lead him to

do. We should consider this question carefully and thoughtfully, and avoid hasty action.

At the present time the outlook for a good fruit crop next season is bright. While we have troubles ahead that we are already aware of, yet on the whole we have reason to look forward at this time to a bounteous reward the coming season. There will be many new orchards coming into bearing for the first time.

Rapid as has been our progress for the past few years, the future promises more. Fruit has become a necessary article of food on the tables of rich and poor, and its use is rapidly increasing, both to the physical and moral betterment of its consumers. Conditions are arising which will demand great changes in our methods of cultivation. The field of usefulness of this Society has only just opened before it. With the present demands for quality, with the increase of insects and diseases, fruit-growing offers no inducement to the sluggard; but for the man with brains and energy who is willing to study and apply the latest methods, to watch carefully and work faithfully, our Connecticut hillsides open wide their arms and promise rich rewards if he will but plant them to tree and vine.

Next in order the Secretary, H. C. C. Miles of Milford, read his annual report as follows:

Secretary's Report.

Mr. President and Fellow Members of the Society:

For the seventeenth time in the history of our Society, the fruit growers of Connecticut have come together in annual session and probably never before under conditions more favorable for a successful meeting.

It is most gratifying to be able to say to you, that in no single year of the eleven years I have officiated as your secre-

tary, has the Society been more prosperous and active than in the year just closed. The membership roll has reached a high point, the meetings and exhibitions have been frequent and well attended, our efforts to increase the usefulness of the organization to the fruit growers of the State have met with approval and success, and our finances are on a sounder basis than ever before. In short, the record for 1907 is open to the public and we are not ashamed of it.

But we should not rest content with present conditions, or feel that we can let up in the least in our labors to carry out the purposes of the organization. We must urge each other on to further progress, realizing that greater energy and enthusiasm than ever, are needed, in order to meet the constantly increasing competition in the fruit business and to solve the many serious problems that confront the fruit grower of to-day. We must direct our efforts to grow large—handsome fruit of high color and quality, equalling, in these respects, the fruit grown in any region.

We should strongly favor the improvement of the home fruit garden for the sake of greater home enjoyment and the increased satisfaction and better health resulting from the free use of good fruit. If we but do our part, our chances for success and satisfactory financial returns are as great as they ever were. Certain it is, if we intelligently carry out the teachings of this Pomological Society and induce others to follow them, it will be the means of adding much to the wealth of the State, besides bringing profit, pleasure and health to all of its citizens.

The failure of the peach crop last season was perhaps the greatest disappointment our Connecticut growers had to meet, but on the other hand, 1907 was fairly favorable for most other fruit crops, and it was again demonstrated that the apple is still the "king of fruits" and the surest money-maker of any fruit for New England planting, for, although the crop was but a moderate one, extremely good prices were realized and growers felt satisfied. In this connection one cannot help but ask why more of our present unproductive hill-farms are

not being planted with the apple, when the outlook for profitable returns is so promising?

Of course, we still have with us the San José scale—and the pest is surely more widely spread over our State now, than one year ago, and according to some of our peach men we are about to witness another outbreak of the “yellows,” but if it is true that “difficulties are but opportunities to test our abilities,” then we should have the faith to hold on, and the ability to take advantage of every help offered us in our fight against these enemies of the orchard and fruit garden.

What line of business is offered the young man to-day that will bring greater returns, in pleasure, health, refinement and profit than that of fruit culture?

But, as to the details of the Society's work for the past year, which I suppose should be the aim of this report, first

OUR MEMBERSHIP.

At our meeting one year ago the record showed 510 paid-up members. From Feb. 1, 1907, to Feb. 1, 1908, we have added 109 new members, and the grand total of names on the roll during the past year was 632; 5 members have died during the year, viz.: Roswell A. Moore of Berlin, Benj. F. Colby of Kensington, W. A. Warren of Rockville, Frederick Ellsworth of Hartford, and Cyrus H. Blair of Newington; and applying our new membership rule, which strikes from the list all those who fail to renew before the close of the current year, we must deduct 106 names, thus making the total paid-up membership to date, 521. We have 5 enrolled as life members.

Comparing this record with that of previous years, we find that our membership has kept up to about the same figure for several years in succession. Without a doubt we have a good big membership for a State the size of Connecticut, but I don't believe the limit has been reached yet. At least, we should not let up in our efforts to add to our numbers.

OUR FINANCES.

From February 1, 1907, to February 1, 1908, I have received and paid over to the Treasurer,

From Annual Membership Fees	\$493.00
From Life Memberships	20.00
From Sales of Fruit at Annual Exhibition	33.55
From Fruit sent to the Jamestown Exposition	5.00
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Total	\$551.55

I have drawn orders for the payment of bills amounting to \$1,716.37.

These expenditures are grouped in the following departments of our work:

Annual Meeting of 1907	\$416.07
Annual Report	417.80
Annual Exhibition—	
Running Expenses	\$103.35
Premiums Paid	265.24—
	368.59
Exhibit for National Grange Session	39.61
Institute Work (Paid out since Feb. 1, 1907)	139.53
Field Meetings	38.30
Secretary's Office—	
Expenses and Supplies	\$101.60
Salary, balance of year 1906	25.00
Salary, on account of year 1907	100.00—
	226.60
Miscellaneous Printing, Advertising, etc.	64.62
Sundry Items	5.25
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Total	\$1,716.37

I would add that in almost every instance our expenses have been kept within the estimates as made by the Finance Committee at the beginning of the year.

MEETINGS.

Since February 1, 1907, the society has held an annual meeting of two days, four summer, field meetings, the annual exhibition in September, and seven institutes during the winter and spring of 1907. Our series of field meetings last summer were very successful and will long be remembered as among the best we have ever held. Beginning July 2d, we were invited by our worthy president, Mr. Putnam, to visit Fernwood Farm in Litchfield, the beautiful estate of Mrs. Goddard, and a most enjoyable day was spent by about 150 of our members, viewing the orchards and gardens, the extensive forest, and the flocks and herds on this well-conducted estate of nearly 500 acres. Again, on August 7th, the Society was so fortunate as to be invited to arrange a field day on another of Connecticut's many fine country estates, this time at the Pope Place in Farmington, of which our fellow-member, Mr. A. B. Cook, is superintendent. This meeting, which included the Dairymen's association and farmers generally, was probably the largest out-door gathering of farmers held in the State in many years. Fully 500 were present to enjoy the fine hospitality tendered by Miss Pope and profit by a study of the unique features of this model farm and country home. On September 3d, the Society joined with the dairymen in a visit to the farm of Andrew Kingsbury & Son at Coventry, where, in spite of the unfavorable weather, a successful meeting was held. The field meeting season was brought to a close with a splendid gathering on the fruit farm of Brother J. H. Hale in Glastonbury, September 17th. Like all the meetings at Hale's, this was full of novel, enjoyable and instructive features, and the large number present felt well repaid for the visit. The main object of the meeting was to inspect Mr. Hale's new orchards, planted on what was but recently some of the roughest land in the State, and the marvelous results shown were a surprise, an incentive, and an object lesson to us all.

A notable program of speaking and discussions was held on the rocks and in the midst of a tract now being cleared, while the very informal dinner, which was "strictly on the basket-plan," was no less an enjoyable feature and one that should set the pace for future field meetings in greater numbers all over the State. Let us keep up these summer gatherings and all feel it a duty and a privilege to entertain the Society, for they are productive of an immense amount of good both to the host and the visitors.

Our annual exhibition grows from year to year in popular estimation and value. Several of the fairs invited us to exhibit with them last fall, but your executive committee decided that better arrangements could be made at Berlin than anywhere else, and accordingly our tenth annual exhibition was held there September 24-27. The results in a season when the shortage of good fruit was evident, surprised us all, proving that the members of this Society have reached the point where they can make a creditable showing under almost any conditions of weather and crops. About 1,100 plates of fruit were displayed, even some remarkably fine peaches showing up; the number of exhibitors was 56, and the total amount of premiums awarded, \$271.90. I think the Society can render no greater service to the people of the State than by continuing and enlarging these annual exhibits. By means of them the fairs are benefited, the public is interested and instructed, fruit growers encouraged and taught many valuable lessons, and, more than all, the horticultural interests of the State are advanced to a higher plane.

At the invitation of the State Grange, our Society arranged a display of fruit for the session of the National Grange at the Capitol in November, and won hearty praise of the many visitors from all sections, for the excellence of the exhibit. Nothing finer has ever been staged by the members of this Society, and the general beauty and attractiveness of this exhibit was probably never equalled before in this State. Some 400 plates were shown, the whole making a magnificent sight.

INSTITUTE WORK.

The season of 1907 was an active one for the Society along the line of farmers' institutes, no less than 15 institutes being conducted from early in the fall of 1906 and through the winter and spring of 1907. While this work is largely voluntary on our part, yet it has proved a wise method of using a portion of our funds, for by means of the institute the gospel of raising and eating more and better fruits is carried to the people in all our rural towns.

Who can estimate the far-reaching value of the many helpful ideas, profitable suggestions, encouragement and general uplift that has gone out from these splendid meetings?

Since our last report institutes have been held with granges in the following towns:

Middlefield, Hebron, Higganum, East Haddam, Milford, Killingly and Berlin, and all were profitable and successful meetings.

This winter, so far, no institutes have been held, owing to a proposed arrangement, looking to closer co-operation with the other State agricultural organizations, and the delay in putting such arrangements into effect. However, plans are already made to carry out a goodly number of institutes before the close of the winter.

Last year's work was done at the very low cost of \$139, and those of our officers and members and experiment station workers who sacrificed both time and money deserve much credit.

OTHER WORK OF THE YEAR.

The last General Assembly was liberal to us, renewing our usual appropriation of \$1,500 a year. This enabled us to again publish an annual report of our work. This book, comprising some 200 pages, was published and issued in the spring, thus adding another volume to the file of valuable reports, which show year by year the progress and development of horticulture in Connecticut. Their worth as refer-

ence books is increasingly great and no fruit grower should miss these volumes as they appear, and to which his connection with the Society will entitle him.

No attempt was made last year to gather and publish fruit crop reports. As there was no peach crop, this omission was perhaps not so important, but it seems to your Secretary that provision should be made for this work, so that each season the growers and buyers could depend upon our crop reports as a source of reliable information regarding the condition of Connecticut fruit crops. The value of such a system is recognized in other states, and the little that we have done in this line in past years has shown its benefits in securing better markets and prices for our fruits.

It would also be desirable to make a complete census of the fruit-growing industry of the State, that we may find out along what lines our interests are growing and where we have lost ground in the last ten years. Your Secretary hopes this matter will receive attention at this meeting and a Special Committee be appointed with instructions to carry out this important work.

Finally, along what lines we should direct our efforts the coming year, I do not need to speak; older heads than mine among the leaders in this Society can advise as to the future policy of the organization.

Only permit me to suggest, that fruit growers and the State, as well, are expecting more of us each year, and if we would succeed and grow, and if we hope to retain the respect and confidence of our friends at home and abroad, we must take no backward step, but rather push forward the work along wise and progressive and practical lines.

Two important phases of organization work, it seems to me, lie before us; both are necessary and legitimate.

First, To get closer to the needs of the growers, and foster among them a spirit of co-operation in their business, so that whether it be in spraying, in buying supplies or in advertising, etc., or selling our fruits, we shall feel that our interests are mutual and, as fruit growers, we must stand or fall together.

Second, To use our efforts to increase among our people a greater appreciation for fine fruits; to urge them to plant them, care for them intelligently and use them in greater abundance in their daily diet, "esteeming them necessities rather than luxuries"; to start a campaign of education, that shall explain and call attention to the many advantages of Connecticut lands for the production of high-grade fruit, especially peaches and apples, and the opportunities for profitable development of unproductive farms into fruitful orchards and happy, prosperous rural homes.

In closing this report, I desire to express my sincere appreciation of the kind assistance of our officers and members, which it has always been my good fortune to receive.

With harmony and good-will existing among us in our splendid organization, and realizing its great possibilities, the Society cannot help but grow and prosper in the years to come.

Respectfully submitted,

H. C. C. MILES, *Secretary*.

Treasurer's Report.

FOR THE YEAR ENDING FEBRUARY 1ST, 1908.

ORRIN GILBERT, *Treasurer*,

In Account with THE CONNECTICUT POMOLOGICAL SOCIETY.

1907.	Dr.
Feb. 6. To Cash received from H. C. C. Miles, Secretary,	
Annual Membership Fees	\$218.00
7. from Annual Membership Fees	36.00
15. from State Comptroller, State Appropriation Account	372.90
27. from Secretary Miles, Annual Membership Fees	25.00
Mch. 26. from Secretary Miles, Annual Membership Fees	40.00
Apr. 28. rebate A. F. Hawes' bill	3.00
June 24. from Secretary Miles, Annual Membership Fees	36.00
July 26. from Secretary Miles, Annual Membership Fees	25.00
from State Comptroller, balance State Appropriation Account	407.73
Aug. 7. from Secretary Miles, Annual Membership Fees	22.00
Sept. 17. from Secretary Miles, Annual Membership Fees	14.00
28. from Secretary Miles, Annual Membership Fees	34.00
from Sales of Exhibition Fruit	33.55
from Berlin Agricultural Society	50.00
Oct. 17. from State Comptroller, State Appropriation Account	350.69
26. Jamestown Exposition Commission, Fruit for Exhibit	5.00
Dec. 5. from N. S. Platt, Treasurer State Grange	14.70
22. from Secretary Miles, Annual Membership Fees	11.00
1908.	
Jan. 17. from State Board Agriculture	133.93
27. from Comptroller, Account State Appropriation	316.01
Feb. 1. from Secretary Miles, Annual Membership Fees	32.00
	\$2,180.51

1907.		Cr.
Feb.	6. By Balance	\$214.47
	By Cash to Rex Sign Co., Signs for Annual Meeting	2.00
	E. Cyrus Miller, Expenses as Speaker at Sixteenth Annual Meeting	2.00
	7. Chas. E. Bassett, Traveling Expenses attending Annual Meeting as Speaker	55.40
	Prof. Jno. B. Smith, Expenses and Services attending Annual Meeting	20.00
	E. Manchester, Expenses attending Institute..	.95
	Wilfrid Wheeler, Expenses as Speaker at Annual Meeting	6.65
	Jno. E. Kingsbury, Expenses as Assistant to Secretary at Annual Meeting	3.00
	R. S. Bascom, Express Charges on Exhibits at Annual Meeting	8.34
	15. The Whitehead & Hoag Co., 500 Membership Badges	22.30
	H. C. C. Miles, Secretay, Expenses and Supplies for Annual Meeting	23.82
	John Coombs, Stage Decorations for Annual Meeting	5.00
	Sedgwick & Casey, Rent of Piano for Annual Meeting	5.00
	20. Draft to U. T. Cox, Traveling Expenses attending Annual Meeting	56.61
	22. Check to Wm. H. Honiss, Chairman, Rent of Unity Hall for Annual Meeting	75.00
	New Dom Hotel, Expenses of Speakers, Officers, etc., at Annual Meeting	68.80
	The Tuttle, Morehouse & Taylor Co., Printing Membership Receipt Books	6.75
	The Hartford Printing Co., Printing 200 Bill Heads	1.75
	Kilborn Bros., Envelopes for Annual Meeting Notices	2.71
	Clarence H. Ryder, Printing Programs for Annual Meeting	13.00
	H. I. Spalding, for Services and use of Lantern at Annual Meeting	19.80
	C. E. Steele, Services as Judge at Annual Fruit Exhibit	4.00
	Prof. C. D. Jarvis, Expenses as Speaker at Annual Meeting	4.85
	Geo. C. Comstock, Entry Clerk at Sixteenth Annual Meeting	4.00

Mch.	1.	The Milford Post Office, Stamped Envelopes.	5.34
	11.	H. C. C. Miles, Secretary, Office Expenses and Supplies, December 1, 1906, to March 1, 1907	42.35
	21.	Prof. A. G. Gulley, Expenses attending Institutes, Fall and Winter 1907	6.70
		H. C. C. Miles, Secretary, Telephone Charges for Society, July 1, 1905, to July 1, 1906.	21.10
		A. F. Hawes, Institute Expenses	13.25
Apr.	4.	Wilfrid Wheeler, Traveling Expenses, Speaker at Berlin Institute	7.00
		By Cash to R. H. Gardner, Institute Expenses	4.00
		By Check to F. S. Gammack, Institute Expenses	2.00
May	2.	E. C. Birge, Institute Expenses	3.35
		Geo. H. Lamson, Expenses Attending Institute	1.90
		Geo. V. Smith, Expenses attending Institutes.	3.10
		Miss G. S. Smith, Reporting Proceedings of Annual Meeting	50.00
June	11.	Prof. L. A. Clinton, Institute Expenses	9.00
July	8.	Milford Post Office, Stamps for mailing Annual Report, and Stamped Envelopes	23.34
	15.	C. G. Whaples & Co., Payment on account bill for printing Annual Report	150.00
		E. M. Ives, Institute Expenses	2.70
		Prof. A. G. Gulley, Expenses attending Institute	7.90
		Dr. W. E. Britton, Expenses attending Institutes	2.70
		The Milford Citizen, Printing Institute Programs and Envelopes	8.50
		The Stoddard-Brown Co., making Half-tone Cuts for Annual Report	12.00
		Wm. G. Dudley, Photographs for Annual Report Cuts	2.25
		H. C. C. Miles, Secretary, balance of salary for year 1906	25.00
Aug.	7.	H. C. C. Miles, Secretary, Office Expenses and Supplies, March 1 to July 1, 1907	31.77
		Milford Post Office, Stamped Envelopes	5.34
	31.	J. R. Clark, for Printing and Supplies, November 1, 1906, to July 1, 1907	33.40
		C. G. Whaples & Co., Printing Berlin Institute Programs	4.00
		Kilborn Bros., Envelopes and Stationery	3.35
		Dr. E. H. Jenkins, Institute Expenses of Dr. G. P. Clinton	4.21
		H. C. C. Miles, Secretary, Salary on account year 1907	50.00

Sept. 17.	The Milford Post Office, Stamps and Stamped Envelopes	11.98
28.	By Cash to Geo. C. Comstock, Expenses and Services as Entry Clerk at Annual Exhibition	10.00
Oct. 7.	By Check to C. G. Whaples & Co., balance of bill for Printing Annual Reports	182.20
8.	Vredenburg & Co., Lithograph Advertising Cards	3.45
17.	H. C. C. Miles, Expenses and Supplies for Annual Exhibition	17.64
	H. C. C. Miles, Secretary, Second Payment on Salary, Year 1907	50.00
Oct. 18.	S. T. Maynard, Services and Expenses, Judge at Tenth Annual Exhibit	9.47
	Clarence H. Ryder, Printing Premium Lists for Annual Exhibition	10.50
	Prof. A. G. Gulley, Exhibition Committee, Expenses Annual Exhibition	11.15
	J. H. Putnam, Traveling Expenses, Institutes and Annual Exhibition	18.71
	L. C. Root, Exhibition Committee, Expenses Annual Exhibition	8.45
	Union Tea Co., Rent of Plates, Annual Exhibition	6.16
	Berlin Agricultural Society, Express Charges advanced on Exhibits for Annual Exhibition	12.99
	Chas. E. Steele, Services, Judge, Tenth Annual Exhibition	2.00
	Miss A. T. Thomas, Services, Judge, Tenth Annual Exhibition	2.00
	The Rex Sign Co., Four Signs for National Grange Exhibit	4.00
Nov. 26.	J. H. Putnam, Cash paid for Supplies, National Grange Exhibit	4.43
	H. C. C. Miles, Secretary, Cash paid for Expenses and Supplies, National Grange Exhibit	12.28
27.	C. G. Whaples & Co., Programs for Field Meeting, September 7, 1907	4.00
	Clarence H. Ryder, Printing Field Meeting Notices and Envelopes	7.25
	John Coombs, Rent of Palms for National Grange Exhibit	2.00
Dec. 4.	P. Berry & Sons, Expressage and Cartage and Storage of fruit for Grange Exhibit	4.90

	H. C. C. Miles, Secretary, Office Expenses and Supplies, July 1 to November 15, 1907	41.62
23.	By Cash to E. Rogers, Cash paid for supplies for Annual Exhibition	1.55
	By Check to Prof. A. G. Gulley, Expenses on account National Grange Exhibit	12.00
	Clarence H. Ryder, Printing Letter Heads and Badges	5.25
1908.		
Jan. 9.	By Premiums Paid, as awarded at Annual Fruit Exhibition, 1907, viz.;	265.24
	By Check to E. C. Warner	\$29.75
	E. Manchester	10.50
	J. E. Andrews	5.00
	F. J. Taber	1.10
	J. B. Parker, Jr.	1.50
	E. Rogers	4.50
	E. J. Hough	3.00
	A. B. Lapsley	1.65
	G. G. Tillinghast	4.40
	Louis Pero	2.00
	E. W. Dyer	3.50
	Dennis Fenn	2.70
	E. J. Stuart	5.50
	W. H. Fuller	1.25
	C. H. Baker	1.05
	S. B. Wakeman	2.90
	F. B. Bailey	7.75
	Chauncey Griswold .....	.75
	Joseph Smith	3.25
	E. E. Brown	6.40
	Willis A. Lane	1.00
	Julius Moss	1.00
	Geo. H. Griffith	11.25
	Mrs. E. W. Ellison	22.92
	Josiah Gilbert	1.57
	Barnes Bros.	11.10
	H. B. Buell .....	.95
	Harvey Jewell	2.25
	Joseph Albiston	2.80
	H. O. Griswold	6.25
	Thos. Callahan	1.25
	Prof. A. G. Gulley	8.15
	J. H. Meriman .....	.25
	Connecticut Valley Orchard Co.	3.00
	Miss Alice R. Bailey	2.00

	Miss Alice Fawthrop	1.50
	Mrs. F. B. Bailey	14.00
	Mrs. Huber Bushnell	21.15
	Thos. Griswold & Co.	7.75
	J. H. Putnam	11.75
	George W. Smith	1.75
	Prof. H. W. Hillyer	1.00
	L. J. Robertson .....	.50
	A. B. Cook	2.40
	Geo. F. Platt	1.85
	J. M. Hubbard .....	.65
	H. E. Savage & Sons	21.25
	T. H. & L. C. Root	4.50
	A. J. Pierpont	1.00
Jan. 27.	H. C. C. Miles, Expenses as Delegate to In- stitute Workers' Convention	13.00
	Milford Post Office, Stamped Envelopes	5.62
	Milford Citizen, Printing Programs for Field Meeting, August 7, 1907	2.00
28.	The Best Mfg. Co., Making and Printing Ad- vertising Calendars	6.75
31.	Premiums paid, as awarded at Annual Meet- ing, February, 1907, viz.:	20 50
	E. E. Brown	\$4.00
	Connecticut Agricultural College	4.00
	George W. Staples	3.00
	A. B. Cook	3.00
	Thos. Callahan	1.00
	L. J. Robertson	1.50
	Dennis Fenn	1.00
	H. E. Savage & Sons	3.00
Feb. 1.	By balance	249.67
		<hr/>
		\$2,180.51
		<hr/> <hr/>

SUMMARY.

Receipts	\$2,180.51
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Expenditures.

Premiums	285.74
Miscellaneous Expenses	1,595.83

AVAILABLE RESOURCES.

Feb. 1, 1908. Invested in Berlin Savings Bank	113.47
Due on account State Appropriation for year ending September 30, 1908	833.30
Balance in treasury	249.67

SOCIETY'S PERMANENT INVESTED FUND.

Feb. 1, 1907. Invested funds in Berlin Savings Bank	\$89.45
Apr. 1, 1907. Deposited Life Membership Fees	20.00
Jan. 1, 1908. Interest to date	4.02
	<hr/>
	\$113.47

AUDITORS' CERTIFICATE.

HARTFORD, CONN., Feb. 5, 1908.

We have examined the accounts and vouchers of the Treasurer,
Mr. Orrin Gilbert, and find them correct.

GEORGE W. STAPLES,
ANDREW KINGSBURY,

Auditing Commtee.

Reports of Standing Committees.

MEMBERSHIP COMMITTEE.

MR. ALLEN B. COOK, Chairman: As the Secretary has said, our numbers remain practically unchanged from year to year. In other words, we gain enough new members to just about balance those lost by death; and dropped for non-payment. This should not be so. The interest in fruit growing in Connecticut must be increasing and our membership should increase with it. It should not be limited to the growers of fruit alone, but every one interested in the production and consumption of choice fruit should become a member.

Let us consider for a minute what a membership in the Society means. Of course, everyone is welcome to attend all of our meetings and derive whatever benefit they can; but for a *member* it means that he comes into closer touch with others engaged in the same line of work; he becomes better acquainted, more enthusiasm is aroused, and better results follow. Then, too, he gets a full report of the Annual Meeting with its lectures and discussions, which is of great value for reference. There are some members who are unable to attend the meetings who pay their dollar for the report alone. For those interested in the production of choice fruit, but not actively engaged in it, every dollar they put into the Society for membership helps just so much to carry on and increase the good work it is doing. The amount of work that the Society can do is limited only by the amount of money it has to do with.

The Annual Membership costs only \$1.00 and a Life Membership \$10.00. As yet very few have taken out life memberships, but it seems as though many more would do so. It does away with all bother of making yearly payments, and will be cheaper in the end, for who is there among you who does not expect to keep up his membership for more than ten years?

The membership books are open at all times and the Secretary or anyone of the Membership Committee would be very glad to take your name and money at any time. Let us make a strong effort at this meeting, and also throughout the coming year, to increase the membership of our Society. Surely every one of us has a friend or neighbor whom we can induce to join.

Report of Committee on Legislation.

MR. J. H. HALE, Chairman: There was really little for the committee to do during the session of the last Legislature, except to look out that we got our regular appropriation. That was secured, and the Secretary and Treasurer have told you what has been done with the money. There was a bill in relation to amending the present law in relation to the deer question. The damage done by deer has to be paid by the State. Land owners, fruit growers and others, may, if they find the deer doing damage, shoot them, not with a rifle, however. As a result of that amendment, quite a number of deer have been killed since its passage. There are some matters that it seems best to have come before our committee the coming year. I understand that representatives from other states request that we join them in securing legislation looking to more uniform methods of grading and packing fruits for shipment. There are also matters in our own State upon which action should be taken.

Report of Committee on Injurious Insects.

DR. W. E. BRITTON, Chairman: It is seldom that this committee can report upon a new injurious insect. This year we must report on a pest which is new, not only to Connecticut, but to the United States, and new to science.

In the report of this committee for last year (Report of Connecticut Pomological Society, Vol. IX., 1907, p. 30), mention was made of a sawfly larva which defoliated many

peach trees in the orchard of Barnes Brothers at Yalesville, during the month of June. As was there mentioned, this insect proved to be a new species, and was described by Dr. A. D. MacGillivray* of Cornell University as *Pamphilius persicum*. Last summer the insect was extremely abundant and threatened to do much damage. During the season a study was made of its life history, so now we know something about it and how to combat it. Most of the field work was done by my assistant, Mr. Walden, and a full account will appear in the forthcoming report of the State entomologist, but a few of the chief facts regarding the pest may be given here. The eggs are laid about the second week in June on the under sides of the leaves, being placed horizontally against the midrib, like those of the imported currant worm. The eggs are white, and are oval in shape. They hatch in about a week, and the young larvæ spin a few threads and begin to feed upon the leaves, first eating channels from the margin toward the midrib, then rolling the free corners over themselves to form a case; they continue feeding until perhaps the leaves are all devoured. The larvæ, after reaching full size, go into the soil and assume a brilliant apple green color, remaining in the ground until the following spring before pupating. Adults appear two weeks after pupating, and eight days before laying eggs. At the time of their emergence they fairly swarmed over the trees and weeds in one section of the orchard. The adult is a four-winged sawfly, allied to the adult of the currant worm, and there is but one generation each year.

Rather elaborate experiments were conducted by Mr. Walden with methods of controlling this insect. It has been supposed that the peach leaves would be injured by the application of poisons. We know that Bordeaux mixture will cause them to drop. I have injured them severely with weak kerosene emulsion and with common soap and water (one pound in eight gallons). Quaintance states* that in the

*Canadian Entomologist, Vol. 39, p. 308, September, 1907.

experiments of the Bureau of Entomology at Washington all arsenical poisons used on peach foliage injured either the leaves or the fruit. On account of this experience and testimony we hesitated about recommending any application to the foliage. Professor Smith writes me that in New Jersey arsenate of lead can be used on peach leaves without injury. At first a trial was made on a few peach trees at the Station, and as the leaves were not injured, the matter was reported to Barnes Brothers, who, fearing serious damage from the attacks of the insect, commenced spraying a portion of the orchard with arsenate of lead at the rate of two and one-half pounds to three pounds in fifty gallons of water. There was no apparent injury to the leaves, so the work was continued. In all, between 4,000 and 5,000 trees were thus treated by the owners, using several hundred pounds of arsenate of lead. This is probably the largest trial ever made in this part of the country with arsenical poisons on peach foliage, and the results were entirely satisfactory. Not a particle of injury to the trees could be found, though the sawfly larvæ were killed readily, and probably a more dilute mixture would prove effective.

This insect was found in small numbers in orchards fifteen miles distant from the Yalesville orchard, so we may fairly expect trouble from this pest in some localities. Whether it will be as serious or as abundant anywhere again as it was the past season at Yalesville, we cannot foretell, and any prediction would be but speculation. But all peach growers should be on the watch for it and be prepared to combat it if necessary.

The work of suppressing the gypsy moth (*Porthetria dispar* Linn.) at Stonington, has been carried on successfully during the year. The infested area has not increased in size, and less than three thousand caterpillars were found in 1907 where ten thousand were taken in 1906, though twice as many men were employed and ten times as many trees were banded.

* Bull. 67, p. 47. 1907. Bureau of Entomology, U. S. Dept. of Agriculture.

The legislature passed a law giving more authority to the State entomologist in fighting this insect; imposing a heavy penalty for transporting living specimens into the State, or from the infested area to a region not hitherto infested; making it unlawful to hinder or obstruct the control work; and appropriating one thousand dollars, and as much more (up to ten thousand dollars), as the State Board of Control and the State Entomologist may deem necessary. We expect to be able to exterminate the gypsy moth from this region, but the work must be kept up for one or two seasons after the last caterpillar has been destroyed. The pest may also turn up at any time in other parts of the State. I have just been informed that it has been found in Springfield, a point very close to the Connecticut border. This makes it necessary that considerable scouting be done in the northern portion of the State.

The severe winter destroyed a large proportion of the San José scales, fully fifty per cent. in some localities, so that this insect did not multiply as in 1906; yet late in the season it appeared to increase with unusual rapidity. The chief developments of the year in the way of remedies have been toward the use of "soluble oils," though we still advise lime and sulphur in the peach orchard. Two experiment stations in the United States have been working with the preparation of home-made "soluble oils" or emulsions. Bulletins 75 and 79 of the Delaware Station (Newark, Del.) and Bulletin 49 of the Storrs Station, give formulas for preparing these mixtures.

The apple leaf miner (*Tischeria malifoliella* Clem.), which was so troublesome in the eastern part of the State in 1906, appeared in large numbers the second week in May, but fortunately a spell of cold, wet weather killed many of the adults before they laid their eggs, and also prevented the hatching of many of the eggs which had already been laid. On the whole, very little damage was done by this insect in 1907.

The apple aphid (*Aphis pomi* DeGeer) again did considerable damage by checking the growth of nursery stock

and newly set orchard trees, and in several cases remedial treatment was essential. Spraying with kerosene emulsion, soap and water, or one of the "soluble oils" is the remedy.

The New York plum scale (*Eulecanium cerasifer* Fitch) was received from Bethany, where it had succeeded in badly infesting a European plum tree. This and the apricot scale (*Eulecanium armeniacum* Craw.) are becoming more common, and occasionally become sufficiently abundant to injure trees. Both are large brown species, oval-hemispherical in shape, and each has but one brood in a season. The young of both species appear about July first, and the remedy is to spray the trees with a strong oil emulsion between November 1st and April 1st.

The grape-vine flea beetle (*Haltica chalybea* Ill.) was received from Plantsville, where it damaged grape-vines by eating holes in the buds just before it was time for them to open. An arsenical poison applied to the buds is the remedy.

The currant twig-girdler (*Janus flaviventris* Fitch) was received from New London, where it injured the new growth in laying its eggs. Fortunately, however, this insect is not sufficiently abundant to cause much damage. There seems to be no easy method of control.

Green fruit worms, rose chafers, codling moth and apple maggot were present in about the usual numbers, but on account of the scarcity of fruit, their depredations were more noticeable than in most seasons. The red-humped caterpillar and the yellow-necked caterpillar defoliated many young trees in orchards late in the season. The hickory tussock moth was more abundant than for many years, and the caterpillars were found feeding upon apple and other fruit trees and many kinds of shade and forest trees. The fall canker worm, which has been scarce about the Station since 1900, is again becoming abundant. The adults emerge during the

warm days of November and December, and the females lay eggs. The males are seen flying about, and as many as fifty or sixty were observed on the trunk of a single tree.

Respectfully submitted,

W. E. BRITTON, NEW HAVEN, *Chairman*.

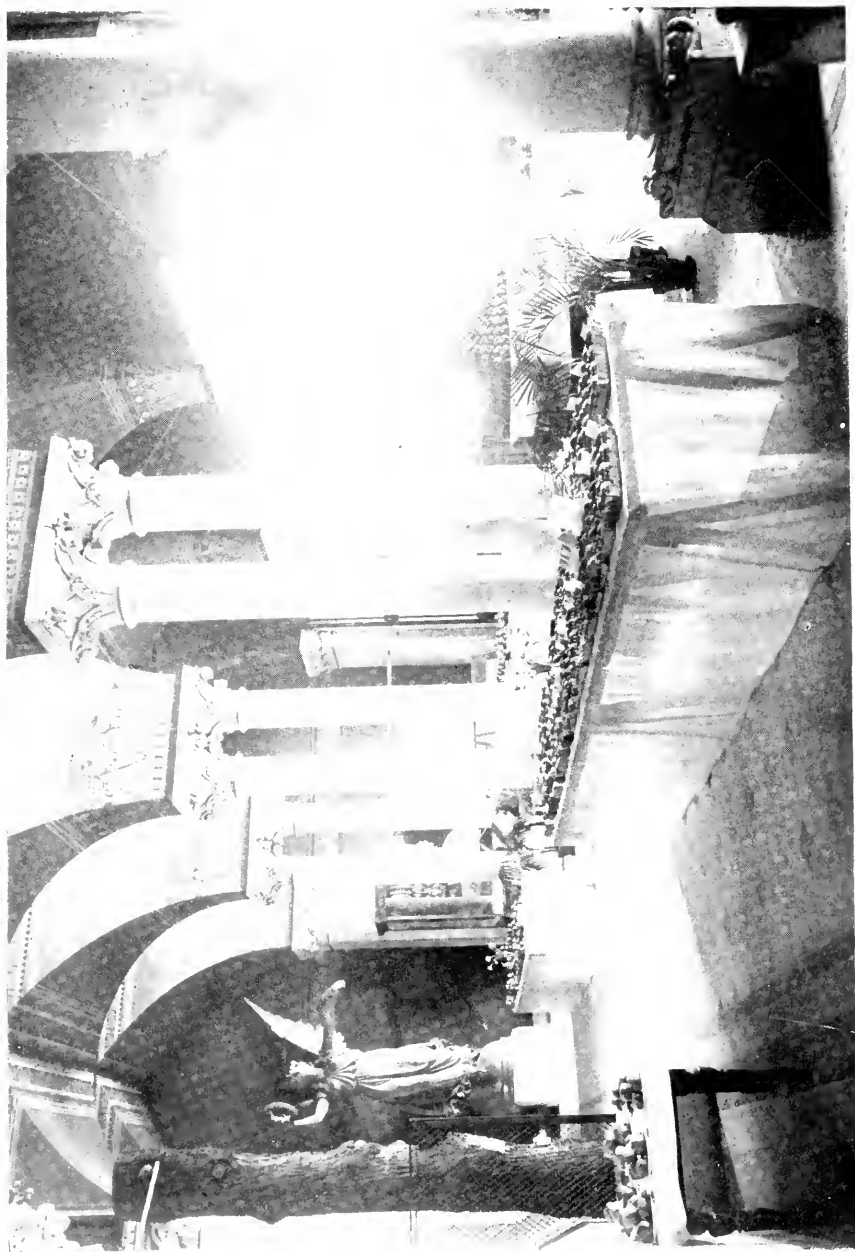
C. D. JARVIS, STORRS.

W. E. FROST, BRIDGEWATER.

Report of Committee on Exhibitions.

MR. L. C. ROOT, Chairman: Your committee met with the executive committee early in the year and it was voted to accept the invitation of the Berlin Agricultural Society to hold our fall exhibition with them. At a field meeting later in the season after the continued drought, the officers and some of the members present discussed the matter, and it seemed to most of us that there would be no fruit to exhibit. Therefore it was thought best to drop the Fall exhibition if the Fair Association would let us off. This they were unwilling to do, as their advertisements were out, and they would be unable to get other attractions. The officers of the Berlin Society assured their strong support, and your committee cannot too highly praise them for the manner in which they provided for and assisted us in the exhibition.

Your Secretary sent out a strong plea for an exhibit from all who had any good fruit. Evidently everyone responded, for there was a good display of all kinds of Connecticut-grown fruit, even peaches. Every visitor must have been surprised to see such a fine collection after so unfavorable a season. A total of over one thousand plates of fruit was shown, divided as follows: Apples, six hundred; peaches, one hundred twenty-five; grapes, one hundred twenty-five; pears, one hundred twenty; plums, twenty-five; and quinces, twenty. To these should be added the canned fruits, jellies, etc., which were evidently cut down (in quantity, not quality) by the drought. The nut collection and a fine collection of specimens



VIEW IN THE STATE CAPITAL AT HARTFORD, NOVEMBER 1907.
Showing the magnificent display of fruit arranged by the Society for the meeting of the National Grange.

of insects, scale, etc., from the Experiment Station at New Haven were also on exhibition.

The never-failing supply of fruit at the Connecticut Agricultural College filled one long table, to the credit of the State and College. The apples on exhibit, packed for market, called forth many complimentary remarks.

Your committee feel that this was a remarkably good showing for the season and thank the members for their hearty support.

While at Berlin, the invitation came to this Society through Mr. O. S. Wood, Master of the State Grange, to make an exhibit in the Capitol at Hartford, during the National Grange Meeting, which was to be held in November. Many of the exhibitors at Berlin donated their fruit for this purpose, and also some to send to the Jamestown Exposition. All were carefully wrapped and sent to cold storage. The exhibit for Hartford was placed in the Capitol on the opening day of the Grange meeting, and kept up to the close, fresh fruit being added from time to time.

There were in all over four hundred plates of fruit in this exhibit. The Connecticut Agricultural College furnished a fine display, including seventy-one varieties of apples. The bushel boxes packed for market were of fine quality, and, we think, excelled those grown by our brother grangers in Oregon. A pyramid of Connecticut-grown fruits was placed in the center and was admired by the throng of visitors.

Some of this choice fruit might have served a third time and be on exhibition here to-day, but, when those who had the work in charge went to the Capitol to pack up the fruit, they found everything had been taken! we suppose by those who are paid by the State to take good care of our Capitol and all in it. Our successors may consequently experience some difficulty in the future in collecting fruit for this kind of a display.

Respectfully submitted,

L. C. ROOT,	}	<i>Committee.</i>
GEO. H. HALE,		
A. G. GULLEY,		

Report of Committee on Fungous Diseases for 1907.

By DR. G. P. CLINTON, New Haven, *Chairman*.

On behalf of the Committee on Fungous Diseases, I present the following report. The character of the weather, rather than fungous diseases or insect injuries, was the important cause of poorer crops than usual in this State the past year. As a whole it was a most unusual year as regards climatic conditions upon plant growth. To begin with, there was some winter injury, though the winter was not unusually severe. The reports made at our annual meeting last February showed that most of the peach blossoms in the State were dead at that time; later investigations also showed more or less injury to the young twigs. However, the trees did not suffer from winter injury anything like they did in Michigan. Professor Taft, in a recent letter, writes that in his state, "our trees were seriously injured and millions of them killed by the freeze of October 10, 1906." *

The second unfavorable feature of the season of 1907 in Connecticut was the unusually backward spring. On May 8th, market-gardeners told me that they were about a month behind the average season. Coupled with this late spring were two severe frosts on May 8th and May 21st. These frosts further injured peach and also strawberry blossoms and severely injured or killed outright many unprotected tender plants, such as tomatoes and potatoes. The most evident injury, however, was to the young unfolding leaves of the sycamores, not only in this but in other eastern states, so that the scanty foliage on the trees was a noticeable feature all summer.

The third prominent character of the weather was the very unusually dry period during the best of the growing season. This drought was more prominent in certain parts of the State than in others, but was felt in some degree throughout. I quote from a newspaper clipping which gives a fair idea of the dry weather in the vicinity of New Haven:

"Since June 1st, over two months ago, scarcely any rain has visited this vicinity, and every day sees the trees and gardens shrivel more and more under the hot rays of a relentless sun. The official figures show that since June 5th only 2.94 inches of rain have fallen, when in former years the normal has been at least 8 inches for the same period." This drought was not broken until August 24th.

To offset these unfavorable conditions of spring and summer, however, the fall was favorable and somewhat longer than usual, the first frost not coming until October 1st and then only partially killing the tender vegetation. So some crops partially recovered from the ill effects of the drought; others, like tobacco, seemed to have come out better than expected, but, after curing, really had such a poor quality that the final injury was still great; some others, as potatoes and celery, never succeeded in making their normal growth.

I have thus enlarged on the weather conditions, because these not only acted unfavorably upon plant growth, but likewise upon their fungous parasites, which, with few exceptions, did comparatively little injury and then chiefly in the early spring or the late fall.

There was considerable injury caused by the blackberries and raspberries drying up, and even the fruiting canes dying at the time of their fruiting season, especially if the plants had not been thoroughly cultivated to conserve the moisture of the soil. Some growers thought this due to a fungous trouble similar to the wilt-fungus, but so far as could be ascertained, it was only one of the consequences of the extremely dry weather at that time.

The only new fungous troubles of our fruits that I have to report were both found on the currant. As I have not studied the diseases of this host so thoroughly as I have those of most other fruits, it is quite probable that these are new to the State only in the sense that they have not been reported before. The downy miller (*Sphacrotheca mors-uvæ*) was found in a small nursery at Storrs doing some damage to the red currants. Its prominent growth of dirty brownish-white mycelium was confined to the ends of the young twigs and

their partially unfolded leaves, apparently having arrested the development of the latter. It also occurred here conspicuously on the fruit of neighboring gooseberries, but not on their branches. These plants had been sprayed with Bordeaux, but apparently the treatment had been made too late to be of much service. The second disease, found both at Storrs and New Haven, was an anthracnose of the ripe fruit of the white currant that caused the berries to shrivel up on the clusters, the fruiting stage of the fungus showing more or less plainly, as minute, circular blackish specks on the skin. This seems to be an anthracnose different from that which sometimes defoliates the leaves. It does considerable damage and apparently was not uncommon, though it has escaped my attention until this season.

The apple was less injured by sooty blotch and scab the past year than usual. The fruit speck trouble, which seems to be caused by some undetermined fungus and appears chiefly at harvest time and in storage, was perhaps more prevalent than usual. Baldwin spot, too, was more in evidence than for some time. Varieties other than the Baldwin, especially the Greening, showed more or less of this trouble. Attempts at cultures were made from the brownish tissue in the interior of apples, but no bacterial or fungous growths were obtained. This seems to indicate, as has been supposed by other investigators, that the trouble is a physiological one, though the exact cause is not known. Mr. Ives, who furnished me specimens, suggested that possibly the apple aphid might have injured the fruit when young, and since the spots often start just beneath the skin, I thought that possibly through the punctures of these insects bacteria might have been introduced that could develop only after the apple had reached complete maturity and the tissues had begun to soften and lose their acid character. The results of my attempted cultures, however, did not confirm this view. On the other hand, it is possible that the peculiar seasonal conditions may have caused the trouble. The fact that a very similar trouble in the potato, known as the interior browning, was more evident

than usual, favors this view, since a very dry season or dry soil is believed to cause this potato trouble.

There was received one complaint of spray injury to apples. Since this was different from the ordinary injury of Bordeaux causing russetting of the fruit and spotting of the foliage, I will mention it here. In this case the trees had been sprayed several times with Bordeaux and lead, the last treatment having been made about the middle of August. The injury consisted of small specks in the skin, especially clustered at the bloom and stem ends, in which some of the spray still remained when the fruit was examined in December. The injury was evidently caused by some soluble portion of the spray being finally carried in minute quantities beneath the skin, probably through insect punctures or the lenticels, and causing the death of the cells with which it came in immediate contact.

Last year, at the annual meeting of the Pomological Society, there was called to our attention the premature, partial defoliation of peach trees in certain orchards of the State. During the past season I have had a chance to investigate this trouble more fully, as it was even more prominent than the year previous. During August I visited an orchard at Seymour where the trouble was unusually prominent in certain blocks of trees, and I also examined a few other orchards in different parts of the State where the trouble showed less conspicuously. From all that I could see and learn from the owners, I have come to the conclusion that this trouble results as a secondary consequence of winter injury (most of the trees probably having been injured during the severe winter of 1903-4), made especially prominent the past season by the very severe summer drought. I have not the time to discuss the matter fully at this time, but I wish to make it emphatic as my belief that we do not see all of the serious effects of winter injury the following summer, or that the trouble entirely ends with the cutting out of the dead and worst injured trees at that time. Each year, since the severe winters of 1902-3 and 1903-4, has seen trees dying from secondary effects of winter injury, and others have gradually

shown unfavorable symptoms as indicated by leaf fall, gummosis of the trunks, yellows or "so-called yellows," etc. It seems to me important that we do not confuse, or at least lose sight of, the primary cause, viz., winter injury, with the possible secondary causes which alone might not have been able to have had any important effect on the trees.

Aside from such troubles as leaf fall, etc., however, peach trees during the past year have had more than the normal amount of yellows, as compared with the last few years. Likewise late in the fall many of the trees, both in the nurseries and in young orchards, apparently in no wise showing any very evident winter injury, have developed unusual symptoms that some persons believe are the first indications of the developments of yellows. Pruning of these young orchards this winter has shown that many of the young branches are dead, or in not very good condition. The chief manifestation of the trouble so far was the premature development of the axillary and even of adventitious buds last fall. As this is one of the symptoms of yellows, this has led some to believe that we are on the verge of another wide-spread wave of yellows. Others think that possibly this condition was only an outcome of the very dry summer, the moist fall merely starting a premature growth of the buds which otherwise would have remained dormant if the season had been a normal one. Personally I am not prepared to give a positive opinion, though I do not think the latter is without reason. I am even willing to go a little further and state that if this trouble really does develop into an extended outbreak of yellows, I see no reason why there is not some connection between yellows and unfavorable weather conditions, especially severe winters and dry summers. This, however, is apparently not in accord with the beliefs of many of the experts on yellows. The cause, exact nature, and prevention of yellows, however, are subjects that experts are not fully informed upon. So far as I have been able to learn our positive information concerning yellows is limited to three chief facts, viz.: (1) That yellows can definitely be

carried into healthy nursery stock and even orchard trees, by the use of buds from trees having the yellows, even when not strongly manifest in these trees. (2) That yellows can not be eradicated from a tree by pruning, even in the early stages of the trouble. (3) That the character of the fertilization of the soil is no preventive or remedy for the trouble.

Besides these facts we have others that seem to have much evidence in their favor, especially the preventive treatment followed in certain districts in Michigan, of removing trees as soon as any signs of yellows appear. I am especially glad that we are to hear more on this subject from Mr. Waite of the United States Department of Agriculture, since what little we do know concerning this trouble is largely the result of the investigations of that department.

The remainder of the morning session was then given up to a discussion of the question, "Is legislation needed to secure uniform methods of grading, packing and branding fruits for shipment?" by representatives from the various state horticultural societies in New England.

Dr. George M. Twitchell of the Maine Pomological Society was scheduled to open the discussion. In his absence, on account of illness, his place was filled by Mr. A. A. Hixon, Secretary of the Worcester County, Mass., Horticultural Society.

Is Legislation Needed to Secure Uniform Methods of Grading, Packing and Branding Fruits for Shipment?

Mr. Hixon prefaced his remarks by reading the following letter from Dr. Twitchell:

Mr. President, and Gentlemen of the Connecticut Pomological Society: I regret that a severe illness, confining me to my room, necessitates absence from your sessions and the pleasure of a personal acquaintance with the fruit growers of your State. It was to have been my

privilege, as well as a great pleasure, to present to you the cordial greetings of the members of the Maine Pomological Society. I cannot express my disappointment at this outcome of long cherished plans to be with you on this occasion.

Accept from the Maine Pomological Society its best wishes for your continued success as an organization, and from myself a personal word of encouragement for every effort intended to further the fruit interests of New England.

Maine pomologists are deeply interested in establishing annual conferences among New England fruit growers. Set apart as we are, it seems eminently wise that we meet frequently together to discuss questions of mutual interest and to cultivate that spirit of united research which must inevitably lead to more concerted action, and a volume of influence otherwise impossible. Not as a distinct organization is this suggested, but simply a gathering of representatives from all New England societies at some one of the annual pomological sessions, that the influence and enthusiasm of these meetings may be made to cement closer the workers, and thus strengthen, as individual efforts cannot, interest in the great problems confronting New England fruit growers. Conditions are all the while changing from simple to more complex and this increasing complexity forces a study and consideration not demanded formerly.

It is desired that each society provide for representation, said representatives to be requested to present at said conferences subjects of special interest to the several state societies, one session of each annual gathering of the organized society where conference is held, to be devoted to the consideration of subjects presented by the delegates. The coming into Maine in November of delegates from five distinct fruit organizations added greatly to the interest in our annual fruit sessions, and I have been assured by a large number of our members that this visit and the

wise counsels given will greatly assist the fruit growers of Maine in their work the coming year.

I am instructed to present for your consideration two specific propositions and ask your coöperation in making both effective in advancing the reputation for New England fruit in every market. The first relates to the establishment of a uniform package for shipment. For want of this our fruit goes upon the market in barrels of varying sizes, shapes and forms of construction and not always in most attractive manner. Then, too, the variations in size naturally detracts from the attractiveness and uniformity of the shipment. Maine fruit growers are desirous that, if possible, there be established throughout New England a standard size for barrels and boxes, believing that this will enhance the selling value of our fruit. The question with us is not so much the size of the barrel or box as the fixing of a standard by these several organized bodies. In Canada the minimum size of barrel prescribed by the Inspection and Sale Acts is 96 quarts, the inside measurement being $26\frac{1}{2}$ inches between heads, 17 inches head diameter and $18\frac{1}{2}$ inches middle diameter. I do not present this as the standard, but would urge such action by your Society as will enable other states to confirm your decision and thus a standard size be finally established by state legislation.

With the rapid inroads made, in all our markets, by the Hood River, and other western grown fruit, shipped in boxes, this style of packing must claim more attention. Canada is required to use a box 10 x 11 x 20 inches, inside measurement, the end pieces not less than $\frac{5}{8}$, or more than $\frac{3}{4}$ inches thick, the sides $\frac{3}{8}$ and top and bottom $\frac{1}{4}$ inch material. Any definite action taken will necessitate the spreading of information as to size of barrel and box, kinds of lumber and construction, and this must necessarily be accepted as the legitimate function of the several State Pomological Societies. Working jointly, immediate results would be manifest. This subject is of importance, and merits our critical attention.

The second subject I am instructed to present for your consideration and, we trust, favorable action, is that of state legislation to insure uniform grading, packing and branding of fruit.

Confidence in the uniformity and honesty of the quality and grading of all fruit is the sole basis for any successful trade, and with the exacting system prevailing among the corporate interests controlling western shipments, this subject comes to us in a manner not to be thrust aside. It is not pleasant to be obliged to yearly face the fact that New England fruit sells in all foreign markets at fully fifty cents below the same varieties grown in Canada, and this because the Fruit Marks Act insures to the buyer of Canada grown apples a standard grade, not excessively high, but uniform, something impossible to insure under individual packing in the States. This is not a question of individual liberty, but of the position our fruit shall occupy in the great distributing markets. Maine pomologists are not asking for the Fruit Marks Act of Canada, but that the fruit societies of New England unite in formulating a bill to be presented the several legislatures, which will insure this protection and provide authority for the enforcement of the necessary sections.

Vermont growers, alive to the serious loss resulting from want of this legislation, will present such a bill to the incoming legislature of that state and endeavor to secure its passage. I am certain that Maine growers will ask of its legislature in 1909 the enactment of a like measure. With us the trouble is not so much with the growers as the dealers and packers who handle the bulk of our fruit, and whose standard is purely commercial, with no regard for the future reputation of the state. For this reason our fruit has received a serious setback this season. Grown under the most adverse conditions met for years, it has been packed and rushed to market without due regard to sorting, until the letters received from the larger dealers across the water indicate that our reputation has suffered materially.

Individuals handling their own fruit may not feel the necessity for this action, but the great majority are, and will be, dependent upon the foreign markets and the fact of legal standard requirements governing grading, packing and branding, with penalties for failure, offers the only solution to the problem facing the growers. Maine will ship this year over two million barrels of apples, and this question of reputation becomes of paramount importance.

The system of facing, which implies what an examination does not sustain, is a species of dishonesty from which the consumer must be protected.

I beg here to be permitted to present the following letter just received from the official head of the fruit department of Canada. I believe the experience of Canadian growers worthy of our consideration.

OTTAWA, CANADA, January 13, 1908.

"I am in receipt of your letter of the 8th instant on my return to Ottawa. I shall be glad, indeed, to assist you in any way I can in your endeavors to secure honest grading and packing.

"One of the most noticeable improvements in our packing, directly traceable to the Fruit Marks Act, is the almost total absence of any thing like overfacing. When you open a barrel of Canadian fruit and see the face, you see a sample of the contents all the way through. From my personal knowledge of the business before the Fruit Marks Act was passed, it was the exception rather than the rule to see a barrel not over-faced.

"I regret to say that we have this year many examples of over-grading, but this is largely upon a point where there is a legitimate difference of opinion, namely in point of size. The Fruit Marks Act prescribes that No. 1 apples shall not be less than medium in size, and this year the apples in Ontario are particularly small, and we have had a larger number of violations of the Act in point of size than we have had for a large number of years, but in all other respects the grading is better than in former years. We have, however, had some complaints from buyers in the Old Country, who paid more for apples than they were worth and are now endeavoring to get even by demanding a better quality than their contracts called for.

"The Fruit Marks Act has given us a workable No. 2 grade. Never before was a No. 2 grade marketable. It was impossible to make contracts in the North West for the No. 2 grade until the amendments to the Act in 1906, which defined this grade. If the

Fruit Marks Act did nothing else but place the grading of apples on this basis, it would have served a most useful purpose.

"The attention which has been drawn to the grading and packing of apples as the result of the Fruit Marks Act has naturally improved the packing even of those packers who would not knowingly violate the Act, and the educational work in this and other respects is doing much to improve the apple industry in Canada.

"If you get sales catalogues from Jas. Adam, Sons and Company, and other fruit brokers of Great Britain, you will note that they quote two distinct prices—one for Canadian and one for American fruit—and the one for Canadian fruit is usually about two shillings ahead of the American. This difference is to be attributed in part, at least, to the Fruit Marks Act.

"The Inspectors have not the power to stop any fruit; and it is difficult to say at this moment just what per cent. of the packages examined are found to be wrong, but it is certainly a very small proportion. But although it is a small proportion, it would really not be a fair thing to judge the Canadian fruit by the per cent. found wrong by our inspectors, as they usually select packages for the purpose of examination, from the brands which they have reason to suspect are wrong."

(Signed) A. McNEILL,

Chief, Fruit Division.

Greatly increased attention is being paid our fruit interests. All over Maine the orchards are multiplying and, wisely fostered, our fruit industry may be made one of the leading branches of our great agricultural output. That fostering care has directly to do with the disposal of the product, and Maine growers, and most reliable packers, are united in their conviction that just legal action is demanded to insure that uniformity of grading, packing and branding, which alone can establish New England in its rightful position in the fruit distributing centers of Europe. We come to you gentlemen of the Connecticut Fruit Growers' Association, and ask your coöperation upon these important measures.

Respectfully submitted,

GEORGE M. TWITCHELL,

Delegate representing Maine State Pomological Society.

Mr. Hixon then quoted from the "Inspection and Sale Act" of Canada, as referring to fruit and fruit packages, as follows:

THE MARKING OF FRUIT.

320. Every person who, by himself or through the agency of another person, packs fruit in a closed package, intended for sale, shall cause the package to be marked in a plain and indelible manner, in letters not less than half an inch in length, before it is taken from the premises where it is packed,—

- (a) with the initials of his Christian names, and his full surname and address, or, in the case of a firm or corporation, with the firm or corporate name and address;
- (b) with the name of the variety or varieties; and,
- (c) with the designation of the grade of fruit, which shall include one of the following four marks, viz.; Fancy, No. 1, No. 2, No. 3.

2. Such mark may be accompanied by any other designation of grade or brand, if that designation is not inconsistent with, or marked more conspicuously than, the one of the said four marks which is used on the said package. 6 E. VII., c. 15, s. 1.

321. No person shall sell, or offer, expose or have in his possession for sale, any fruit packed,—

- (a) in a closed package and intended for sale, unless such package is marked as required by the provisions of this Part;
- (b) in a closed package, upon which package is marked any designation which represents such fruit as of
 - (i) Fancy quality, unless such fruit consists of well grown specimens of one variety, sound, of uniform and of at least normal size and of good colour for the variety, of normal shape, free from worm holes, bruises, scab and other defects, and properly packed.
 - (ii) No. 1 quality, unless such fruit consists of well grown specimens of one variety, sound, of not less than medium size and of good colour for the variety, of normal shape and not less than ninety per centum free from scab, worm holes, bruises and other defects, and properly packed.
 - (iii) No. 2 quality, unless such fruit consists of specimens of not less than medium size for the variety, and not less than eighty per centum free from worm holes and such other defects as cause material waste, and properly packed;
- (c) in any package in which the faced or shown surface gives a false representation of the contents of such package; and it shall be considered a false representation when more than

fifteen per centum of such fruit is substantially smaller in size than, or inferior in grade to, or different in variety from, the faced or shown surface of such package. 1 E. VII., c. 27, ss. 5 and 7; 6 E. VII., c. 15, s. 2.

BRANDING FALSELY MARKED AND FALSELY PACKED.

322. Whenever any fruit in any package is found to be so packed that the faced or shown surface gives a false representation of the contents of the package, any inspector charged with the enforcement of this Part, may mark the words, "Falsely Packed," in a plain and indelible manner on the package.

2. Whenever any fruit packed in a closed package is found to be falsely marked, the said inspector may efface such false marks and mark the words "Falsely Marked" in a plain and indelible manner on the package.

3. The inspector shall give notice, by letter or telegram, to the packer whose name is marked on the package, within twenty-four hours after he marks the words "Falsely Packed" or "Falsely Marked" on the package. 2 E. VII., c. 10, s. 3; 6 E. VII., c. 15, s. 3.

FRUIT PACKAGES.

325. All apples packed in Canada for export for sale by the barrel in closed barrels shall be packed in good and strong barrels of seasoned wood having dimensions not less than the following, namely: Twenty-six inches and one-fourth between the heads, inside measure, and a head diameter of seventeen inches, and a middle diameter of eighteen inches and one-half, representing as nearly as possible ninety-six quarts.

2. When apples, pears or quinces are sold by the barrel, as a measure of capacity, such barrel shall not be of lesser dimensions than those specified in this section.

3. When apples are packed in Canada for export for sale by the box, they shall be packed in good and strong boxes of seasoned wood, the inside dimensions of which shall not be less than ten inches in depth, eleven inches in width and twenty inches in length, representing as nearly as possible two thousand two hundred cubic inches.

The discussion was then taken up by Mr. John W. Clark, of North Hadley, Mass., delegate from the Massachusetts Fruit Growers' Association.

Mr. President, Members of the Connecticut Pomological Society:—

I am here as a representative of the Massachusetts Fruit Growers' Association, to give the views of the Asso-

ciation in regard to this question. We have listened to the paper of our friend, Dr. Twitchell, and the feeling in Maine is as he represents it; as I found when I was there last fall they wished to get an act passed similar to the Canadian Fruit Marks Act. The feeling in Massachusetts is different; we don't think we want it; our conditions are very different from those in Maine. The fruit of Maine, or a large portion of it, is exported; the fruit of Massachusetts and Connecticut is used mostly at home. While perhaps the Fruit Marks Act would help them in Maine in the way of competing with the Canadian people, it will not help us in Massachusetts. The grading of apples by the Fruit Marks Act, even the No. 2 apples, the way apples were in Maine, would have thrown out half of their apples. The fruit Marks Act may be a good thing when we get to it, but we have not got there yet. I think it would be much better to educate our growers and grow better fruit and then they will pack it better. I don't think a quarter or not over half of the fruit would be salable as No. 1 fruit, and as far as No. 2 fruit is concerned, when we take the Canadian Act, it says, "it shall be medium in size, free from worms and other defects that will decrease the quality of the fruit." What is the No. 2 fruit? I have just been at work on two carloads of No. 2 fruit and I have watched it as it has gone through my hands to see what proportion would go as No. 2 fruit under this Fruit Marks Act, and I say that not one-tenth of it would pass as to size and being free from worms. To go into the No. 2 class 80% of it shall be free from worms and of medium size. So, I think as far as the Fruit Marks Act would apply to us in grading our fruit, we don't want it.

I don't think, so long as the consumers are not asking it, we growers should bother ourselves. If we cannot put our No. 2 fruit on the market as we do now, I don't see what we are going to do with it. I want to get all the money I can out of my fruit, and I try to. I try to sell all of my dropped fruit in the market for what I can get. We must do this, as help is scarce and labor is high.

Other things are high proportionately. I would like to see a uniformity in packing, but not a law passed in regard to the grading of our fruit. I was authorized by my society to speak against any such act being passed, as we have a market at home where our fruit is disposed of, instead of sending it abroad.

PRESIDENT PUTNAM: As the hour for the noon recess has now arrived I think we shall have to defer further discussion of this important question until this afternoon. Others will have an opportunity to be heard then.

It has been customary to appoint early in the session special committees to examine and report on the exhibits made in the lower hall, therefore, I will appoint the following:

Committee to Judge the Exhibit of Fruit—John W. Clark of North Hadley, Mass.; N. S. Platt, of New Haven, Conn.

Committee on Exhibition of Implements—L. C. Root, of Farmington; M. L. Coleman, of Seymour; E. E. Brown, of Pomfret.

At 12.30 a recess was taken until the afternoon session.

AFTERNOON SESSION.

The second session of the meeting was called to order by President Putnam at 1.30, nearly every seat in the hall being filled. The attendance was one of the largest at any meeting of the Society, not far from 600 interested fruit growers being present. There were also many ladies in the audience.

The discussion of the question of uniformity in grading, packing and branding fruits, was again taken up, Mr. Hixon, of Massachusetts, speaking as follows:

“Regarding the address and letter of Dr. Twitchell, which was read this morning, I would say that I was one of the Com-

mittee of three appointed to consider just such things as Dr. Twitchell has suggested, and I will say this much, for any conference of this kind that may meet in the New England States, I will see that the Worcester County Horticultural Society sends a delegate and I would like to see at our meeting in Worcester next month a delegate from this Society; I would like to meet them in New Hampshire and again in Maine, and, if they have such a meeting in Vermont, I would like to meet them there. I think it is wise that we should have such a meeting to consider things that may be good for the various growers in the whole of the New England states. We can consider it as a whole better than one alone. I believe that it would be a proper thing to dispose of Dr. Twitchell's address and letter. I don't believe it is well to pass it without any consideration, because if the Doctor had been here he would have made a strong fight for some of the recommendations he mentions."

MR. J. M. HUBBARD: I thoroughly believe in this matter of uniform packing, also I think there should be some legal authority for what shall constitute No. 1 and No. 2 fruit.

MR. CLARK, of Massachusetts: We ought at least to be obliged to put the name and address of the grower on each package of fruit sent to market. Then, if the grower is dishonest, it will be found out and corrected.

MR. N. S. PLATT: It seems to me that there should be some sort of a guide that shall inform the buyer what No. 1 and No. 2 grades of fruit mean. We ought to consider the consumer as well as the grower in this matter.

You will remember that Mr. Lupton told us at our meeting a year or two ago, that we must standardize our fruits. But we are not ready yet to ask for the passage of State or National laws to compel us to do this. No doubt it is coming before long, and the members of this Society should be prepared for it.

PRESIDENT PUTNAM: Last March I attended a similar conference at Worcester where this subject was under discussion. I did not feel that I was prepared to place our Society on record as favoring all the recommendations suggested, but

I did go so far as to say that our growers would no doubt stand by the proposition to place the name and address of the grower on packages of market fruit.

Now Mr. Hixon has mentioned three things. The first is, that it is a good thing to have these conventions and delegates present from the different state societies. That is one proposition. Do you want to take any action on that, in having delegates appointed to attend these meetings of the different societies?

MR. J. H. HALE: My understanding was that we do not meet with every state society, but that *once* a year with some state society; perhaps this year at Worcester; perhaps next year at Burlington, with the Vermont people, or with the New Hampshire people.

I will move that the President and Secretary of this Society be appointed permanent delegates to attend conferences of the New England Horticultural Societies once a year.

This motion was duly seconded and upon vote was unanimously passed.

MR. HALE: I also move that this committee be instructed and authorized to co-operate with the others in the establishment of a uniform package and, if necessary, to pass a law or a recommendation for uniform packages for our various state societies.

This motion was duly seconded and passed.

MR. HALE: I would like to have our delegates stand for similar regulations as contained in the Fruit Marks Act of Canada, especially in so far as it refers to stamping the owner's name on the package, and to secure this through Society regulation rather than State law. In line with that—the Canada Fruit-Marks Act—the fruit which has come under that standard receives the approval of the Canadian Government and that is its passport for entrance into any market of the world. I hope when our committee acts it will formulate a plan whereby the seal or stamp or label of the Connecticut Pomological Society will stand for Connecticut fruit, the same as the stamp of the Canadian Government stands for Canadian fruit. I will make this as a motion, Mr. President.

This motion was duly seconded and upon vote was declared passed.

PRESIDENT PUTNAM: I think we must now take up the regular program of the afternoon, and it gives me much pleasure to introduce to you the first speaker, Prof. U. P. Hedrick, of the New York State Experiment Station, who will speak to us on the subject of "Hardiness in the Peach."

PROF. HEDRICK: Mr. President, ladies and gentlemen—It affords me great pleasure to meet with you to-day and to bring you greetings from New York State. We are larger, but you are the older. Many of our fruit growers are descendants of the good people of Connecticut and come from your State; many of our varieties of fruit came from Connecticut and we, as a younger society, have much to learn from you. The Horticulturists of New York have had an exceptionally good year. While the crops were not as large, the returns have been good, and in Western New York the prices have been exceptionally good and the money is already in the pockets of the growers, for which at this time they are sincerely thankful.

I want to give you the report and result of investigations I have been making during the past few years of the Hardiness of the Peach. I take it your conditions here are similar to those in New York and Michigan.

Hardiness of the Peach.

By PROF. U. P. HEDRICK, Horticulturist, N. Y. State Experiment Station, Geneva.

The chief hindrances to peach growing in North America are winter freezes and spring frosts. No part of the continent where peaches are grown, excepting favored portions of California, is free from the danger of a freeze that will kill the trees, or a spring frost that will destroy the blossoms. The losses suffered during the winter and spring just passed threaten the existence of the peach industry in many parts of the United States and Canada. If these hindrances are to

continue and at short intervals as in the decade just passed, the situation for the peach growers is truly discouraging. All must agree that the greatest problem which the growers of this fruit now face, is how best to avoid or check injury from freezes or frost. The problem is not an insurmountable one, for we find here and there varieties or orchards almost or wholly uninjured and possibly adjoining others with trees or buds partly or wholly killed. What conditions of the trees, of the soil, or of the care makes the difference? There must be reasons for the injury of the one and not of the other. If we could intelligently explain the eccentricities and anomalies of winter-killing and spring frosts, we might do something to avoid them and to better treat the injured plants.

I have made two efforts to find some explanation of the varying behavior of peach trees during freezes and frosts. In the spring of 1905, I addressed letters to about one hundred of the best peach growers in Michigan asking for their experience as to the hardiness of the peach in tree and bud. In the spring of 1907, about the same number of letters were addressed to peach growers in New York.

This paper is a brief review of the answers obtained. The great importance of the subject seems to have been obvious to the peach growers, for almost without exception answers were given by those addressed, and in such a manner as to show their interest. The experiences given and the theories advanced are many and conflicting, but out of the great mass of material obtained I am sure that we can get some good. In making these investigations, it needs to be said further, that during the past three summers I have visited the orchards of many of my correspondents and have noted the conditions of the trees under consideration and have a personal knowledge of many of the conditions discussed.

The topics are as follows:

I.

INFLUENCE OF SOIL ON HARDINESS.

It is usually held that trees are hardiest on sandy, gravelly or stony soils. In the peach orchards of Michigan, the

growers consulted held this to be the case almost without exception. But in New York, the kind of soil seems to make but little difference, providing it is warm and dry. If these two factors be favorable, peaches seem to thrive in any of the soils of New York. The difference in opinion between the peach growers of Michigan and New York arises from the fact that the great belt in which peaches are grown in the first named State has a sandy soil, and growers there have scarcely tried the peach on clays, loams or shales, upon which some of the best orchards in New York are located.

But this point is made clear: *the peach must have a warm dry soil* to secure the greatest possible hardiness inherent in the species. Only in such a soil can trees make a strong, firm, well matured growth that seems to be conducive to hardiness. A warm soil is especially necessary to secure a growth that will withstand cold. Plants in a warm soil have more and smaller cells in their tissues and therefore a more condensed sap, both of which conditions are most favorable to hardiness.

Many growers in both states speak of the desirability of a gravelly subsoil to secure a hardy tree. Such a subsoil seems to be conducive to the warmth and dryness of roots, and it is probable that so far as hardiness is concerned, it matters little whether this subsoil be overlaid with sand, gravel, loam, clay, or combinations of these.

II.

DOES THE AMOUNT OF MOISTURE IN THE SOIL IN WINTER AFFECT THE HARDINESS OF THE PEACH?

The evidence as regards this point is clear. Either extreme of moisture—excessive wetness or excessive dryness—gives favorable conditions for winter-killing. A wet soil is conducive to sappiness in the tree and also freezes deeply. Severe cold, especially alternating with warm weather or accompanied with dry winds, causes evaporation of water from trees, and if the soil be so dry as not to furnish moisture to replace the evaporated water, harmful results ensue. Several experiences were given in Michigan

in which trees were injured far more from winter freezes in a dry than in a wet soil. The statement was made by several growers that twigs and buds which are more or less shriveled in winter from lack of water or lack of maturity are almost invariably winter-killed.

III.

WHAT EFFECT DO FERTILIZERS HAVE ON TREE GROWTH AND HENCE ON SUSCEPTIBILITY TO COLD?

It has always been held in theory that fertilizers with any considerable amount of nitrogen, as barnyard manure, cause trees to make a heavy, rank, soft growth susceptible to freezing. The majority of the peach growers consulted in this investigation still hold that such is the case, but a very considerable number of them, and among them some of the best growers in the two states, hold that trees are more likely to suffer from cold if underfed than if overfed. Their experiences indicate that vigorous, vegetable growth in early summer can be made of great service in counteracting cold, and that half-starved trees, or those which have been allowed to bear too heavily, are apt to suffer most from freezing. Fertilizers properly used do not, in the experience of these growers, necessarily induce a rank, soft growth. By using properly balanced fertilizers, by stopping cultivation at the right time, and by judicious pruning, it was maintained that the growth could be kept firm, the top of the tree compact, and the branches well set with buds, all conditions favorable to hardiness. In studying the experiences of these men, one cannot but conclude that fertility may be made an effective means of offsetting cold. Practically all of the growers report that late fall growths are susceptible to winter injury of both wood and bud.

IV.

DO COVER CROPS PROTECT TREES FROM COLD?

There were no conflicting opinions on this point. Growers who had planted cover crops, and nearly all had, were agreed as to the value of this method of protecting trees

from winter freezing. Many individual cases were cited of orchards having cover crops surviving this cold winter or that, when nearby orchards without the covering crop, holding a muffler of leaves and snow, were killed. The peach growers in the two regions consider the cover crop the most effective treatment of their orchards to avoid winter-killing, holding that they protect the roots from cold, cause the trees to ripen their wood quickly and thoroughly, and assist in regulating the supply of moisture.

V.

ARE SEEDLING TREES HARDIER THAN BUDDED VARIETIES?

Seedling peach trees are popularly supposed to be hardier than budded varieties. Most of the correspondents in this investigation state that such is the case, but none give reasons for the supposed greater hardiness of the seedlings. The statements made are in no way convincing and the greater hardiness of the seedlings can be proved only by carefully conducted experiments. Two hypotheses should be tested in determining whether there is a difference in hardiness between budded and seedling trees: 1st, budding may decrease hardiness; 2nd, seeds for the stocks of the budded trees come from the south and these may produce more tender trees than would northern grown seeds from which seedlings come.

VI.

IS THERE ANY DIFFERENCE IN HARDINESS BETWEEN LOW-HEADED AND HIGH-HEADED TREES?

All growers in both states prefer low-headed trees, claiming that both trunks and branches are more often injured in high-headed trees. Buds, however, often survive on the higher branches and not on the lower ones. The reasons vouchsafed for the difference are: The effects of winds in drying out the wood of high-headed trees; low-headed trees are usually most vigorous; and lastly, better protection to the trunk from the sun and hence from sun-scald, one of the ef-

fects of freezing and thawing. Attention is called by several growers to the fact that buds on high-headed trees usually suffer less from spring frosts.

VII.

ARE WINDBREAKS A PROTECTION TO TREES OR TO BUDS?

There was much difference of opinion. From the experiences given it seems that the value of a windbreak depends largely upon the topography of the land. A windbreak so situated as to form still air can only be detrimental so far as cold is concerned. So planted as to deflect or to cause air currents they become of value in keeping off frosts. More often than not, however, it was claimed, they seriously check atmospheric drainage and the damage by frost is increased. Another disadvantage is, should the windbreak be to the north, the buds on the trees thus sheltered are forced and are therefore more liable to injury by late frosts. The testimony was for the most part unfavorable to windbreaks.

VIII.

WHAT DEGREE OF COLD WILL KILL PEACH TREES?

There was a most surprising uniformity in the answers to this question. Nearly all of the correspondents set 20° below zero as the temperature that will kill the peach tree under normal conditions, though some had known them to withstand temperatures of from 20° to 30°, depending upon the condition in which the trees went into winter. The following are the conditions unfavorable to withstanding cold, and about in order of the frequency in which they are mentioned: Lack of maturity of wood; lack of protection of roots by snow or cover crops; poor soil drainage; overbearing in the preceding crop; lack of vitality from ravages of insects or fungi; and the susceptibility of the variety to cold.

IX.

WHAT DEGREE OF COLD WILL KILL PEACH BUDS?

From the answers to this question we are forced to conclude that much more depends upon the condition of the buds

than on the temperature, assuming, of course, a temperature below zero and not greater than 15° , which seems to be the limit that peach buds can stand even under most favorable conditions. The chief factors influencing tenderness of buds are: Maturity of buds; variety; and the time at which the buds of a variety finish their resting period and become ready to grow. Some of the factors influencing temperature are: Lay of land; proximity to water; stresses of changeable weather; altitude; latitude; and currents of air.

X.

ARE TREES FROM NORTHERN NURSERIES HARDIER THAN THOSE
FROM SOUTHERN ONES?

Many opinions were expressed but few men had grown trees from different latitudes under such conditions as to answer the question fairly. The answers were in no way decisive and the question is still an open one to be settled only by direct experimentation with trees of the same varieties from north and south, grown under identical conditions.

XI.

DOES THE CHARACTER OF INDIVIDUAL TREES HAVE ANYTHING
TO DO WITH HARDINESS?

Answers to this question were very indefinite and often conflicting. It was held by some, and with a fair show of experience to confirm the contention, that trees naturally high-headed with few branches, long, spindling trunks, branches and twigs, have soft wood, and are, therefore, more susceptible to freezing. On the other hand, that individuals having naturally short bodies, a goodly number of branches starting low, with short-jointed wood bright and clear when cut, and thickly set with buds, were the least easily injured by cold. The individuality in these two classes of trees is given them by treatment and environments, as pruning, cultivation, soil, distance apart, etc. It is reasonable to suppose that there are such differences in the trees of a variety because of indi-

vidual variation; that is, since no two trees are exactly alike in any respect. One tree of a variety may be supposed to be slightly more hardy to cold than another through inherent variation, but whether such hardiness can be detected through the character of the growth would have to be determined by carefully conducted experiments and can hardly be proved by such observations as my correspondents are able to make.

XII.

ARE THE SMALL-GROWING VARIETIES WITH COMPACT HEADS
HARDIER THAN THE FREE-GROWING SORTS WITH
LARGE HEADS?

Practically all growers say that the compact growing sorts are the hardiest. As would be expected, the small headed varieties are those with the least succulent wood. The following varieties are named as being the most compact growers, and hence hardier than the average: Hill's Chili, Crosby, Gold Drop, Barnard, Kalamazoo, Triumph, Wager and Fitzgerald.

XIII.

IS THE WOOD OF SOME VARIETIES MORE SUCCULENT THAN
THAT OF OTHERS, MAKING SUCH SORTS SUSCEP-
TIBLE TO COLD?

Every experienced orchardist or nurseryman knows that there is a great variation in the texture of peach wood. Some varieties have a much more succulent growth than others grown under the same conditions. Succulency of growth is in some cases a well marked varietal character and one that can be avoided in selecting sorts to plant where hardiness is a requisite. Summarizing the answers from New York and Michigan, the following are the sorts most often named as having the softest and sappiest wood growth: Early Crawford and Late Crawford are named by practically all correspondents as being most succulent in growth, following which, named in order of degree of succulency come: Chair's Choice, St. John, Niagara and Surprise.

The probable reason for the greater hardness of firm and mature growths is that the sap is denser. Dense liquids require a lower temperature to freeze than those less dense. Firm and well ripened woods also have smaller and stronger cells, less easily injured by the freezing and thawing process.

XIV.

ARE YOUNG OR OLD TREES HARDIEST?

Beyond all question young trees suffer most in severe winter freezes. Practically all of my correspondents in both New York and Michigan agree to this, and as a proof many of the Michigan growers give their experience in the several severe freezes that have occurred in that State during the past few years, in which young trees universally suffered the most. It is probable that young trees are injured most because they make a much greater and much ranker growth than the older ones and hence more sap remains in them during the winter. The formation of buds in the older trees is helpful, too, in maturing the wood. There are, however, many exceptions to the statement that young trees are less hardy to cold than old ones. Old trees can be forced to produce large quantities of new wood, susceptible to winter-killing, while on the other hand the superabundant growth of young trees can be kept down by orchard treatment. It is fair to assume, too, that old trees possessing very low vitality are less hardy than vigorous young trees. Thus it was often noted that old trees which had suffered from the ravages of borers or fungus parasites, as curl-leaf or shot-hole fungus, were easily killed by cold.

While young trees are more susceptible to freezing than old ones, yet they are much more likely to recover, if recovery is possible, and their return to the normal condition is more rapid. This is probably true because of the greater vigor of the younger plants and because of the possibility of an entirely new covering of bark for small trees, often impossible with larger ones.

XV.

NAME THE FIVE VARIETIES OF PEACHES MOST HARDY
IN WOOD.

There was, as would be expected, great difference of opinion as to the sorts most hardy. In New York the following five sorts, in order named, were considered most hardy: Crosby, Hill's Chili, Stevens Rareripec, Gold Drop and Elberta. In Michigan practically every grower considered Hill's Chili most hardy in wood, followed closely by Crosby, then Gold Drop, Kalamazoo and Barnard. It was interesting to note that Elberta, Smock and Salway, considered fairly hardy in New York, are somewhat tender in Michigan. The three upon which growers agree in both states are Hill's Chili, Crosby and Gold Drop. Wager, Jaques Rareripec, Carman, Belle of Georgia, Hale's Early, Champion and Greensboro, none of them in the lists of five hardiest, are hardier than the average.

XVI.

NAME THE FIVE VARIETIES MOST TENDER IN WOOD.

Here, too, opinion differed, but not so much as in naming the lists of hardy sorts. In New York the list runs: Early Crawford, Late Crawford, Chair's Choice, St. John, Niagara. In Michigan the first four are as in New York, Early and Late Crawford, Chair's Choice and St. John, followed by Smock, which, strange to say, is considered a fairly hardy sort in New York. Michigan growers consider Salway tender in wood, while in New York there was an even division as to whether it was hardy or tender. Elberta came within a vote of tying Smock for the list of tender varieties in Michigan.

XVII.

NAME FIVE VARIETIES OF PEACHES MOST HARDY IN BUD.

The New York growers named more than a score of varieties as being hardy in bud and were agreed only upon two sorts as being preëminently hardy, namely: Crosby and Hill's Chili, with Triumph, Gold Drop, Steven's Rareripec and

Kalamazoo having an equal number of votes for hardiness. The Michigan growers gave their opinion most decidedly for the five following sorts, scarcely any others being named: Hill's Chili, Gold Drop, Crosby, Kalamazoo and Barnard, with a few scattering votes for Triumph, Early Rivers, Wager and Salway.

XVIII.

NAME THE FIVE VARIETIES OF PEACHES MOST TENDER IN BUD.

Growers in the two regions agree as to the sorts most tender in bud. Not only are the same varieties given, but in exactly the same order, namely: Early Crawford, Late Crawford, Chair's Choice, Reeve's Favorite and Elberta. Among other sorts named as being tender in bud in one or the other or both states are Old Mixon, St. John, Smock, Niagara, Surprise, Globe and Mountain Rose.

QUESTIONS AND DISCUSSION.

QUESTION: What would you use in place of clover for a cover crop?

PROF. HEDRICK: I am not sure. I wouldn't like to stand up here and say I am through with clover as a cover crop. I believe most of the peach growers use barley and oats very freely, then put in clover once in two or three years. It is our safest way, our best way of getting nitrogen where stable manure cannot be obtained. I simply call your attention to the fact that some of the growers think the clover didn't mature as it should. This would apply to crimson clover, though I expect it would be as true of other clover as of that.

QUESTION: What is meant by warm soil; how is the warmth determined?

PROF. HEDRICK: In all of the experiments that have been carried on to ascertain whether or not there was a difference in temperature it has been found that loose soil, all other things being equal, is warmer; the coarse particles, as the shales and sands, are warmer than clay soil. The dark soils

are said to be capable of absorbing more heat than the light ones, although I would not state this as a fact.

QUESTION: In this case was there any observation made by a thermometer to test?

PROF. HEDRICK: No, simply the judgment of the man, and reasoning from the fact that the plants required warm soil, and that in southern countries the peach will do well on clay soil because of having plenty of soil warmth, in spite of the texture of the soil, while in the north we seldom find the peach does well on that soil.

QUESTION: These other characteristics of the soil might complicate the question?

PROF. HEDRICK: They would. It is possibly something of an assumption to say that I feel in my own mind well convinced that a warm soil is much better for the peach than a cold soil.

QUESTION: Do you say the early maturing varieties are more susceptible to winter-killing than the late?

PROF. HEDRICK: Possibly I need to explain that. It has been found by very carefully conducted experiments at the Missouri Experiment Station that certain varieties of peach, the buds of certain varieties, get through their resting period in a shorter time than the buds of certain other varieties, and are ready to start early in the spring, and that those sorts that do not finish their resting period so soon and are already opened up are more liable to freeze.

QUESTION: You would not expect that to apply to the winter season very much?

PROF. HEDRICK: Not a very great deal, only in the spring when the buds are opening and swelling.

MR. J. H. HALE: I shall have to differ with you on that. The warm open winter we have had for the last two or three months will cause some varieties to swell much more rapidly than others.

PROF. HEDRICK: I would expect that would be true, although that would be at a time when the buds are ripe and when they are passing their resting period.

QUESTION: In regard to the remark previously made respecting warm soil, light or dark, would not the drainage have a good deal to do with it?

PROF. HEDRICK: It certainly would have a great deal to do with the soil warmth. A well drained soil is the warmer of the two.

THE PRESIDENT: We will now take up another and very important question in relation to peach culture, viz.: "Peach Diseases," and we are very fortunate in having with us to discuss this subject a man who probably knows more about peach diseases than any one else in America to-day. I take pleasure in introducing Prof. M. B. Waite of the Department of Agriculture at Washington.

Some New Points on Peach Diseases.

By PROF. M. B. WAITE, Washington, D. C., Pathologist in Charge, Investigations of Diseases of Fruits, U. S. Dept. of Agriculture.

[This address was to have been illustrated, but Prof. Waite explained that the lantern slides had been lost en route to the meeting. The lecture was given without the pictures, and was as follows.]

PEACH YELLOWS WITH REFERENCE TO THE PRESENT PROBLEM IN CONNECTICUT.

Cause of the Disease Unknown. The cause of the peach yellows is unknown, but it behaves precisely like a parasitic disease. It is contagious, spreads through the orchard from colonies or from individual trees, which become centers of infection, and is distributed from tree to tree and orchard to orchard by natural methods unknown to investigators. In all respects, therefore, it acts like a parasitic contagious disease. Up to the present time all microscopic and bacteriological methods of investigation have failed to reveal any para-

sites. Investigations along these lines have been wholly negative, although they have been pursued, especially in years past, with great persistence and thoroughness. It seems almost certain that had it been an ordinary germ or bacillus the methods employed would have revealed the same. It is hard for me to believe that the disease is not a parasitic disease, however, and that some day the parasitic organism will be found. The failure to find the cause of the disease or any definite parasite associated with it puts this discussion of peach yellows, which I am called upon to give you, on a different plane from that of the ordinary fungous or bacterial disease of plants. The expert pathologist, on account of this condition of affairs, has no particular advantage in obtaining knowledge about this disease over the horticulturist or orchardist. His special methods of microscopical and bacteriological research have failed. He, therefore, lacks the advantage and light on the subject which these methods ordinarily give him.

It is true that, by comparison with definitely known germ diseases, such as pear blight, and with his general knowledge of plant physiology and pathology, he may possibly steer clear of false theories and conclusions. Such an advantage, however, is mainly negative and gives little help of the positive sort.

I hope I have made it clear, therefore, that in a discussion of peach yellows the writer has no peculiar advantage over his hearers.

What is Known about Yellows. With this understanding, therefore, and with this clear admission of the lack of knowledge, let us proceed to gather all the known facts about this disease, especially those which will throw light on combating the malady in Connecticut. Let us bring up questions concerning this destructive malady of the peach, and from all the known facts, experiments and orchard experience available, answer them as far as we can. By all means, let us bring out the definitely known facts and separate them from the theories more or less probable.

SYMPTOMS.

The most reliable symptom of peach yellows is the premature red spotted fruit. Another symptom almost equally certain is the bushy or wiry twig growth often resulting from premature pushing of lateral buds. Diseased trees, more or less, promptly assume a sickly or yellow color in their foliage. The leaves often have a peculiar roll and droop. After the second year the twigs and branches begin to die back and the tree gradually dies from the top down, ordinarily becoming totally dead at four or five years from the appearance of the first visible symptom. The symptoms may be discussed more critically by taking up the behavior of the different parts of the tree.

The Fruit. On trees first attacked, the fruit usually ripens a week or ten days ahead of time, sometimes even two weeks or more. It is generally oversized, being actually larger than normal fruits of the same variety on adjoining trees. The red spotting may be very pronounced, and more or less red coloration accompanies it, aside from the spots. Inside the peach, the flesh is found to be filled with reddened veins. On some varieties naturally red, such as the Triumph, the whole flesh, or parts of it, may become blood red. The red spots on the skin or the red flecks in the flesh occur in varying degrees of prominence. Sometimes there is scarcely any red spotting on the fruit plainly premature and undoubtedly from a yellows tree. The writer noticed some Smock trees in Pennsylvania last fall. Though plainly affected with the yellows, many of the fruits showed little or no red spotting and red veins. Varieties like the Gold Drop may be premature without much, if any, reddening. The disease then, stimulates the formation of red coloring matter, though it is not always able to produce it. Usually the fruit tastes bitter and flat. The premature red spotting of the fruit is the most reliable symptom of the peach yellows. Yet even this symptom cannot be taken absolutely, inasmuch as girdling, either mechanical or by frost injury, produces a somewhat similar result. Prematuring by girdling and frost injury, however, can gen-

nerally be clearly made out on examination by the critical observer. The red spotting and red streaks in the flesh is also a very reliable symptom and yet even this is not absolutely so, unless the trained eye can distinguish certain other similar troubles. The pustular spot caused by the fungus *Helminthosporium* produces red spotting which somewhat resembles yellows. The red spots produced by the curl-leaf fungus might possibly be confused by one who did not know them, and still less likely of confusion are the flecks caused by the black spot fungus, *Cladosporium*. The prematuring and red spotting, therefore, should occur without apparent cause and are rather easy to distinguish, though hard to describe.

The Twigs. Trees affected by the yellows sooner or later push small, yellow, wiry, vertical sprouts from the main limbs or from the tops of the branches. These sprouts oftentimes push their lateral buds, occasionally three and four times repeated. This results in a tangled, bushy, or broom-like growth. All sorts of variations occur in the development of this symptom. Some years, apparently every diseased tree in the orchard promptly pushes great numbers of these sprouts. In the season of 1906 in Virginia and Maryland thousands of trees pushed wiry sprouts in the fall after the fruit was off, having shown no previous indication of trouble. Usually the bushing is rather pronounced in the latter stages of the disease. Sometimes in the earlier stages the diseased tree does not make the abnormal sprout growth at all, and occasionally a tree goes through all the stages and dies without making any abnormal sprouts. Trees headed back and forced into growth, so far as I have observed, without exception, always throw the abnormal bushy, wiry growth.

The Leaves. On trees affected with this disease the leaves usually turn yellow, giving the whole tree a sickly or yellow appearance, resulting in the common name of this malady. Frequently the red spotted fruit appears on certain branches or even on the whole tree before any marked yellowing occurs. Generally, however, the inside leaves, at least,

begin to show signs of yellowing when the fruit is premature. On the other hand, trees sometimes may be covered with premature fruit and the leaves not only fail to turn yellow, but may be actually darker green in color than adjacent normal trees. I have seen a good many cases where the fruit was premature, often every peach on the tree, enlarged, red-spotted and premature and the leaves darker green than normal. The twig growth is usually shorter on such trees. They behave like trees which have been pinched back or summer pruned.

Another leaf symptom consists in the drooping and rolling upward of the leaves on affected trees. This rolling and drooping, which is an old well-known symptom, has become a prominent feature of the yellows over much of the Eastern States during the past season. This symptom has been considered more particularly applicable to the little peach disease, but was an invariable symptom of the yellows last year from Connecticut to Virginia. In 1906 in Maryland and Virginia the conspicuous thing in the fall of the year was the amount of sprouting growth on the diseased trees. This past season there was very little of the sprouting growth, while this peculiar symptom was greatly exaggerated. Some years normal peach trees drop their leaves in the fall while they are still perfectly green and flat or nearly so, or they may be transformed by autumn coloration before shedding. Some varieties have much more of a tendency to curl, such as the Crawford, Conklin, etc., than others. This curling without other change is the conspicuous new feature of the yellows. It certainly cannot be regarded as at all reliable, inasmuch as it may be found occurring abundantly at the close of the season in orchards plainly not affected by the yellows. In other words, the yellows trees rolled and prematurely their leaves ahead of the normal ones, although last season many undoubtedly healthy trees assumed this peculiar form in their foliage before it dropped. Trees affected by drowning or by frost girdling have been observed by me for several years to have this peculiar symptom.

RELATED DISEASES.

Two other diseases should be mentioned in this connection as belonging to the same general group as the yellows. They are the Little Peach of the Northern States and the Peach Rosette of the South.

Little Peach. The "little peach" resembles yellows in many respects, particularly in its foliage symptoms and yet certain of its symptoms are exactly the opposite, namely, those of the fruit. Fruit on trees affected by "little peach" is under-sized and belated in ripening. It is often a week or two weeks or more belated. Its size may be only slightly reduced in mild cases down to little tiny peaches less than three-fourths of an inch in diameter. "Little peach" trees rarely throw the wiry growth. I have only seen it produced where they were cut back, or on very vigorous young trees. It is rarely bushy and prominent, as in the case of the yellows. The foliage characters of "little peach" are so nearly like peach yellows that when the fruit is absent and no wiry growth occurs, as is frequently the case on yellow trees, it is impossible to distinguish the two diseases. In practical eradication work there need be no occasion for distinguishing these doubtful cases, inasmuch as the treatment is the same. "Little peach" occurs abundantly in Michigan, in some parts of New York State, and was found last summer in New Jersey, one orchard there having been completely wrecked by its attacks. It is usually quicker than yellows in killing the tree, doing this in three years, while the yellows takes five years. It also apparently spreads more rapidly in the orchards and is furthermore more difficult to detect in its incipient stages. This makes it harder to handle.

Peach Rosette. The rosette, which occurs in Georgia and the adjacent state of South Carolina, and also to some extent in Missouri and Arkansas, is a still different disease of this same type. The affected trees produce small, very short bushy growth something like the yellows in principle, but so dense as to form rosettes or bunches of leaves on the trees. Affected trees throw their fruit; produce small, green, shriv-

elled, imperfectly developed (not premature) fruit. The trees usually die, root and branch, the same season, although in Missouri and Arkansas a few cases have been observed where the tree was only half affected and the good half survived until the second year. I believe this takes place on plums more frequently than on the peach. This rapid death of the trees affected by Rosette is an advantage to the orchardist, as the disease is mostly self-eradicatory.

HOST PLANTS.

Peach yellows occurs mainly on the peach, but it attacks also the Japanese group of plums. No other plums are affected by it, apparently. It also attacks the apricot, almond and nectarine. The little peach is known only on the peach and the Japanese group of plums. The rosette occurs on the peach and the native Chickasaw plum and probably also on the Japanese group of plums. Apparently peach yellows and rosette are native American diseases. Little peach may possibly be, but I doubt it. It did not appear until a few years ago, the date of appearance corresponding about with the introduction of the Japanese plums. My supposition has been, therefore, that it was introduced with the Japanese plum, but further investigations in the native home of these fruits will be necessary to determine this.

CHARACTERISTICS AND BEHAVIOR.

Communicability. Since we have not been able to ascertain the cause of the yellows, it is not surprising that the method of infection also remains to be discovered. So far, yellows has only been reproduced artificially by actual budding or grafting from diseased trees. By this method yellows has been reproduced quite frequently in experimental work, particularly in the experiments of Dr. Erwin F. Smith. Recently in making some tests in comparison with the little peach disease, both little peach and yellows were propagated by budding. Dr. Smith also freely reproduced the rosette in Georgia by budding in nursery stock. In this case it is not necessary for the bud to live, provided the bud shield or a

portion of the bark from the bud shield, heals in. This was pointed out by Smith and in a recent series of experiments budding in pieces of the bark without the bud reproduced the yellows. Tests were made in inoculating crushed fragments of the bark, but no results came. In the same way in the little peach disease, portions of the bark, wood, leaves and fruit were crushed and mixed with water and these separate infusions were, when freshly made, injected with a hypodermic needle under the bark of healthy one-year nursery trees. Although these experiments were carried on at the same time that the budding tests were made, and the trees have grown for four years, they remain entirely healthy. I have been repeatedly informed by practical orchardists, notably by H. G. Welch, of Douglas, Michigan, that attempts were made to inoculate trees by whipping the leaves and branches of them with twigs affected by yellows, without transmitting the disease. On the other hand some curious orchard experiences have come up, founded on circumstantial evidence. Mr. Jesse Lockwood, at Olcott, N. Y., in cutting out a colony of about half a dozen yellows trees hauled them on a wagon diagonally through the orchard. The infected branches rubbed against the trees and later a strip of yellows developed along this track. I believe this has been observed in a few other cases. It is possible that these cases might have happened when conditions were just ready or ripe for infection, but if this is the case, we do not know the conditions well enough to duplicate the process at will.

Blossom Infection. Over 100 years ago Prince of Flushing, Long Island, ventured the hypothesis that bees in visiting the blossoms carried the yellows from one tree to another. In the light of recent discoveries in the transmission of pear blight germ by bees, this theory seems to deserve some consideration. It is commonly mentioned by orchardists, probably as a result of the knowledge of pear blight. Dr. Smith, however, after careful observations and experiments, reached the conclusion that yellows was not transmitted in the blossom. Whatever may be found out in the future in this regard, it must be

considered that at the present time we have no positive evidence to show that yellows is transmitted in the blossom. There must be, however, some normal method of infection—possibly more than one, as in the case of pear blight. It may be that it has methods of infection through the blossom and other parts of the tree, as well, but this, like the cause, is still a mystery. We are able to infect artificially by budding, and there is no reason to doubt but that infected trees are produced that way in the nursery. On the other hand, old trees remaining healthy for years, may go down with this disease, especially when it infects new territory.

YELLOW S ON NURSERY STOCK.

When a tree diseased by yellows, or any of the yellows group, is used for budding nursery stock, experimentally, the disease is invariably, or almost invariably, propagated. Naturally, well marked cases are selected for this purpose. Smith budded yellows and peach rosette successfully into both nursery and bearing trees. Recently I have transferred the yellows and the little peach by budding. In fact, one of the main reasons for concluding that little peach was of the same group as the yellows was the manner in which the budded trees behaved. They behaved the same as the yellows, except their different symptoms were developed. The question of the propagation of yellows by means of buds from diseased trees seems an important one. So far, all attempts to secure trees from diseased pits have failed. Recently the writer planted 100 pits from trees well marked with yellows and 100 pits from typical cases of little peach. Neither of these grew. Not a single seed germinated. In all cases where this has been tried, so far as I know, where the pits were from well marked cases, a similar result has been obtained. If this could be assumed to be always the case, it would remove one great possibility of reproducing the disease. Unfortunately we do not know what happens when peach pits are taken from trees only slightly affected or what might be called incubating cases. That is, there still remains the possibility of the reproduction from incipient cases which

have the disease, but have not the symptoms well enough developed to show it. Naturally, it has been difficult to try the experiment with such pits. In the same way, yellows has always been reproduced when buds have been grown from diseased trees, and it would be a very careless nurseryman who would take buds from trees visibly affected, but there still remains the probability of reproduction in case the buds are taken from trees diseased, but not yet sufficiently developed to show. Smith demonstrated that buds taken from apparently healthy sides of trees, having only one side or one branch diseased, developed the yellows. Apparently, therefore, we must look with a certain amount of suspicion upon trees propagated from buds taken from trees in yellows-infected districts or from buds cut from a similar locality.

PURCHASE OF NURSERY STOCK.

Since the yellows has such a wide hold on both the commercial peach and nursery growing districts in the Eastern United States, the purchase of peach nursery stock then becomes quite a complicated question. I have no doubt whatever but that millions of healthy trees are propagated within the area occupied by the yellows. On the contrary, I very much fear that yellows is occasionally propagated in the nursery. It seems to me that there can hardly be any doubt of this by the budding method, if not through the pits. It looks as though, to be absolutely safe, one should not only go outside the yellows area to purchase his peach nursery trees, but should make certain that the nurserymen used pits grown outside of this area, and cut his buds from trees at least several years removed from infested localities. It is a very grave question in my mind whether this is practical in all cases. I am certainly not prepared to take the responsibility of a wholesale condemnation of all the nursery stock grown or now growing within the range of peach yellows. I planted a block of 600 trees four years ago, purchased from within this area and no yellows developed in this block. Another block planted out at the same time consisted partly of this same stock and partly of home grown trees,

and this block has developed some three dozen cases of yellows, both on the home grown and the purchased trees. At first I thought surely here was a case of nursery infection, as no yellows had been known within five miles of the place up to that time. However, simultaneously with this appearance, it appeared in at least a dozen places in the neighborhood, mainly on roadside seedlings or on garden trees. It should be borne in mind in considering this matter in Connecticut that we are not running the risk of introducing a new disease. In considering this matter with relation to California and the Pacific Coast, and also in relation to South Africa recently, I have advised that they purchase only in districts outside of the yellows. I could not see my way clear to advise the purchase of any nursery trees or the transfer of any scions or bud sticks into these wholly uninfested localities unless it be the introduction of new varieties; in the latter case, not until special arrangements were made to quarantine the stock until it had an opportunity to demonstrate its freedom from this disease. It should be pointed out that perfectly healthy trees, whether they come from outside the yellows area or were grown inside this district, would doubtless catch the disease in exactly the same way when exposed to it.

REPLANTING AFTER YELLOWS.

Trees can be replanted where a yellows tree has been dug up, and will live and bear well. This has been demonstrated repeatedly for over forty years, so there can scarcely be any question about it. I know there is a difference of opinion in this regard and some orchardists have felt doubtful about it. A tree so replanted may, however, catch the disease just as the original tree caught it. So many thousands of trees have lived and borne successfully in Michigan and New York State that there can be no doubt about the general fact. This turns out to be the same with little peach as with yellows. There are other reasons why replanting often fails; in fact, replanting is much better after the yellows group of diseases than most other peach troubles. For instance, the nematode disease of the roots persists in

the soil, root rot notably holds over, and the black peach aphid is another example of this kind. There are probably other root fungi or root diseases which live over in the soil and make replanting, especially if the tree was diseased with these diseases, difficult and unsatisfactory. That is, however, quite another matter from the yellows question.

YELLOWS OUTBREAKS.

The present severity of this disease in Connecticut is a part of the general outbreak of the yellows, which has occurred over a considerable extent of country, and has probably been accumulating for three or four years. The destruction of peach trees by this disease has been unusually severe, not only in Connecticut, but in Southern New York, Pennsylvania, Delaware, Maryland and Virginia; possibly, also, we should say, in Eastern Tennessee. As far as Eastern Tennessee is concerned, it is new territory for this disease. Attention should be called to this striking fact, that the seedling orchards of Eastern Tennessee, which have been in the past considered one of the best sources of peach seeds, have been destroyed. Apparently not even bad peach seed can be secured from Eastern Tennessee at the present time. Outbreaks similar to the present one have been recorded for over one hundred years. In fact, this has been the behavior of yellows in the past. In Connecticut, some thirty years ago, there was a similar outbreak, which practically put an end to commercial peach growing. These outbreaks are sometimes of quite an extent, but more frequently rather local. A very destructive outbreak occurred in Delaware and the eastern shore of Maryland in 1886 to 1888. At that time the disease had not even reached the southern counties of Delaware. In Michigan destructive outbreaks have occurred at various points along the peach belt, but never extending the whole length. At Benton Harbor the first great destruction by this disease occurred in 1874-1884. Berrien County had 654,000 peach trees in 1874, and 54,000 in 1884. Later, similar destruction befell the various peach growing centers throughout the 150 miles of the Michigan peach belt. South Haven had

their disaster a few years after Benton Harbor. The disease continued to move to the northward and the writer witnessed the serious outbreak in 1900-1903 in Oceana County, the northernmost county, extensively planted to peaches. These outbreaks in New Jersey, Pennsylvania, New York and Connecticut dated back for over 100 years. They have been followed by periods of subsidence in the severity of the disease, and there is a question as to whether this has not come in most cases from nearly total destruction of the peach orchards in the affected territory; therefore, a lack of material on which to work.

METHODS OF CONTROL.

There were mentions made in the early discussion of peach yellows around Philadelphia of rooting out and destroying the diseased trees. It seems to have occurred quite generally to orchardists that this was a desirable thing to do. It was also discussed and some eradication was done during the outbreak which wiped out the orchards in Benton Harbor in the early seventies. The most decided step in introducing eradication, however, seems to have been made at South Haven, Michigan. A committee, appointed by the South Haven Pomological Society, reporting in 1874, stated that where cases of yellows had been found in the orchards and promptly removed two years before, none were then found, and where new trees were planted in place of the diseased trees, they were growing finely and seemed to be vigorous and healthy. They further showed that it was impossible to cut off single limbs affected by the disease, and that even where two affected peaches were found on the end of a limb and that limb removed, the yellows still persisted and destroyed the tree. The South Haven Pomological Society seems to have been the first organization to persistently advocate and promote eradication, and the results were watched with interest and were in the main satisfactory around South Haven. Other districts in Michigan took up this work, usually, however, after being hard hit and partially or wholly wiped out by the disease, and

have been successful up to the present time just in proportion to the care used in eradication.

In New York State a good many of the better class of growers have been persistently eradicating this disease for twenty years or more. These carefully worked orchards are often situated in neighborhoods where orchards have been seriously affected or totally destroyed by yellows and little peach. I can cite the cases of Mr. Jesse Lockwood and Dr. C. A. Ring of Olcott, New York. Also the orchard of Mr. Willard Hopkins at Youngstown, New York.

Eradication Tests. About five years ago, when the writer's investigations led him to the conclusion that little peach belonged to the yellows group, an eradication test was started in a definite area in Saugatuck Township, Michigan. This area contained about seven square miles, was thickly planted to peach orchards and had about one hundred and forty thousand peach trees. There were some 4,000 or 5,000 trees diseased that were found the first season. Only a small proportion of these, however, were affected with yellows. Three inspections were made and the diseased trees were removed with a fair degree of promptness after each inspection. The next year only between four and five hundred diseased trees were found, being only a small fraction of one per cent. A slight increase of somewhat over a thousand trees was found the third season, but the total number of diseased trees in this area was less than one per cent. Only about one-fifth of these were affected with yellows, the remaining four-fifths being little peach. Similar results were obtained by the local yellows commissioners in the fourth season, which was 1906, and the orchards in this area are still standing in good condition, as far as the yellows and little peach are concerned.

A similar eradication test was started in 1906 in an area of some six or seven square miles around Youngstown, New York, in co-operation with the Cornell State Experiment Station, through arrangements with Professors Bailey and Craig. The figures for the past season, which was the second in this district, showed the number of trees marked and condemned

because of little peach to be about one and one-seventh of one per cent., and because of yellows, two-fifths of one per cent., out of a total of 42,380 trees. Eradication tests have been started by two of the New York State inspectors, one near Olcott, Niagara County, which is affected with the little peach and yellows similar to the Youngstown area, and another in the Warwick or Pine Island district of Southern New York, by Percy L. Husted. The latter is the only instance I have heard of which has not been entirely satisfactory to the men concerned. In general it may be stated that from the eradication tests where careful records have been made over a considerable area and from the experience of the best worked orchards, of which there are a large number in Michigan, and a good many in New York, it is considered that when ordinary conditions obtain, the annual loss from the yellows should be reduced to less than one per cent. per annum, where prompt and careful eradication is done. Whether this result can be secured in the face of such a vicious outbreak as we have in this State at the present time is a question. There is certainly abundant evidence to show that careful and prompt removal of affected trees has in the great majority of cases resulted in very satisfactory and economical and effective control of this disease. Much of these orchard experiments where careful eradication has been carried on has been in districts affected by the yellows where neighboring orchards, less carefully handled, with little or no inspection, have been destroyed by the disease. Evidence of this kind could be given at length, but doubtless you are all ready to accept this statement.

It is a question as to whether yellows would get beyond control and do as much damage as it has done in Connecticut this year if it were really carefully eradicated. As a matter of fact, most of the eradication has been rather carelessly done. It is even surprising that as good results have been secured along this line.

What is Good Eradication? We have always considered that three annual inspections, when properly made at the right time, were sufficient for finding the affected trees. It need hardly be mentioned that the important thing about this

work when it is really undertaken is to find the diseased trees. Their prompt removal, after being found, is a secondary matter, which is taken for granted. Ordinarily three inspections are sufficient. In Connecticut the first one should be made in July or perhaps about August 1st; the second one should be made the latter part of August or about September 1st, and the third late in September, or even running over into October. If a previous eradication has never been carried out, all plainly diseased trees should be removed as soon as they can be noted in the spring. It is always a good thing to inspect a block or row of peaches when they are ripening or about to ripen their fruit. Then the symptom of premature fruits can be utilized. It is always a good plan to have the pickers instructed to call attention to every tree with suspiciously large or premature red spotted fruit. Orchards should be inspected tree by tree, row by row, thoroughly, regardless as to whether they are supposed to have the disease or not. In this way unsuspected cases will often be found.

It seems to me that where a severe outbreak occurs, doubling the number of inspections may well be advised. That would mean pretty nearly an inspection about every two weeks from the first of August. It certainly is advisable to make a very late inspection in October, so as to prevent, if possible, the disease carrying over another year.

The orchardist or inspector is often puzzled over a doubtful case. He dislikes to condemn a tree for removal unless certain that it is diseased. To my mind, however, the real doubtful cases, which are not plainly caused by some other disease or injury, should invariably be removed. One is certainly taking chances of leaving infection behind when he leaves these uncertain cases. It should always be borne in mind that the removal is done for the benefit of the healthy trees left behind.

Inspection Lazes. Undoubtedly the best results are to be secured in districts where every orchardist will be his own inspector. No outside man can more quickly and accurately detect this disease than a peach grower in his own orchard.

He knows the appearance of the trees on every different piece of land, soil type and exposure and keenly recognizes and watches any change of symptoms which could be attributed to the yellows. On the other hand, it is absolutely necessary, to secure good work in a community, to have official inspectors. The reason for this is that many growers, although constantly in the presence of this disease, do not learn to recognize it in its early stages, especially when the trees are not in fruit. Furthermore, there are a good many trees in gardens or by the roadsides or otherwise out of commercial peach orchards that would receive no attention. To secure proper uniformity, therefore, some sort of an official inspector, whether he be paid by the State, County or Township, should be employed. The smaller the unit, the better. The less territory an official inspector must cover, the more thoroughly he can be expected to accomplish his work. As a matter of fact only a few orchardists in my experience have ever done strictly first-class work in eradicating the yellows. Many orchards, otherwise well cared for by progressive and enterprising growers, are still somewhat neglected in this regard and it is a question in my mind whether the recent outbreak in Connecticut cannot be to some extent attributed to carelessness on the part of the growers. I have been through the State nearly every summer for the last four years and have been surprised to see the yellows so commonly scattered about. In fact, I made a remark to a gentleman in the summer of 1904 that the indifference shown the yellows might get them into trouble.

Disposal of the Dead Trees. A word in conclusion as to what to do with the yellows trees after they are found. The main thing, of course, is to find the diseased trees, but when they are found, with our present lack of knowledge about the disease, we feel that the only safe way is to dig the tree up or pull it up with horses and destroy it by burning. Perhaps the very safest way of all is to bring dry wood into the orchard and burn the tree in the spot, or in the center of the colony, if there are several trees, without dragging it out. As a matter of fact, however, there has been so little unsatisfactory

experience as to make this seem an extra precaution. Possibly it might be advisable to pull the trees up and let them wilt or dry out before removing from the orchard. At any rate, there seems to be abundant evidence that a dead peach tree, though it may have had the yellows, is not dangerous in transmitting the disease. Never cut the tops off of yellows trees and leave them standing. Such trees may still sprout out new growth, and from the yellows standpoint are still in action. Kill the tree, root and branch, at any rate. Many orchardists wish to use their yellows peach trees for fuel, and while this is not supposed to be absolutely safe, I have seen good results in many cases where this was done.

Summing up, therefore, I should say that if you wish to be extra careful concerning infection, burn the tree at once, but if the tree is promptly pulled up and allowed to dry, you have probably done all that is possible in killing the disease.

Above all, the best advice I can give you is to pull out and destroy every peach tree in the State which shows the slightest symptom of the yellows next season. If this is carried out, especially if repeated for two or three seasons in succession, all the previous history and experience connected with this trouble points to success in bringing this malady under control. New orchards can then be rapidly planted out and the peach industry renewed under more favorable conditions than ever.

At the conclusion of Prof. Waite's very comprehensive and instructive address the subject of "Peach Yellows" was vigorously discussed.

DISCUSSION.

DR. CLINTON: I notice in a recent newspaper article that Mr. Hale reports that yellows has attacked the trees in Georgia.

MR. J. H. HALE: You don't always want to believe what you see in a newspaper. I never saw a case of yellows in Georgia except, possibly, in the mountain region.

I think so far as the commercial fruit growers of Connecticut are concerned this subject under consideration is of

greater and more vital importance than anything we have to consider. I don't think you realize to-day the condition of the peach orchards in general. From my own observation in the section of the State that is affected by this special outbreak of the yellows I would say there is probably right here very serious trouble ahead. My honest belief is that 50% of the peach trees in Connecticut are diseased with the yellows, and that means an immense loss. When this Society was organized seventeen years ago it was organized as the *Peach Growers' Society*, and it has developed into this Pomological Society, and one of our purposes in getting together was to protect our interests and to stimulate the growers to look after and eradicate the yellows. We got a law passed; a good deal of zeal was manifested by every grower in eradicating every trace of the disease, and we did it. Then the San Jose scale came along and scared the life out of us, and we put all our energy into fighting that and let the yellows go for six or eight years. We have all been negligent of our orchards as regards the yellows, and they are more largely infested to-day than many of us know, and I venture to assert that 50% of the peach trees in the State are now more or less affected with the yellows.

MR. CALLAHAN: Does this trouble strike at the roots of the tree first? My experience has been that the roots go first, that you can pull them out easily.

PROF. WAITE: That has not been my experience. I have seen pulled up 10,000 trees, and as a rule in cases of *real* peach yellows the roots are all right; the same is true of "little peach" as well.

PROF. GULLEY: My experience has been that the top dies first in the yellows, and the same is true of the little peach also.

DR. CLINTON: What will we do if, as Mr. Hale says, that 50% of the peach trees in Connecticut are affected with the yellows.

PROF. WAITE: I would dig them up. I would like to drive this matter home to the people of Connecticut that this trouble is primarily and mainly due to carelessness or negli-

gence on the part of Connecticut orchardists. I suppose you may resent it, but I will give you my best opinion in the matter. It has been the experience repeatedly in communities where they have become more and more careless and did not realize the importance of looking after the few cases of this disease—just like the small-pox in a town—that the only remedy is that of *eradication*. The disease cannot be completely wiped out in any other way.

A MEMBER: How do you explain that yellows is usually worse on frozen trees?

PROF. WAITE: I don't think it is worse on frozen trees.

MR. HALE: The outbreak of yellows was just as bad in Delaware, where the trees were not injured by freezing, and the same is true in other sections. It goes right over the frozen trees and where there is no freezing, perfectly sound, healthy trees. No trees were injured seriously; we had the biggest crop in 1904 we had for years.

PROF. WAITE: I would like to discuss further the matter of ridding the country of yellows. There is no remedy, as I have said, but that of complete eradication. I should mention that in New York State they have inspectors who have taken areas of land to experiment on and have been carrying on the eradication test in those areas. One of these areas is up in the Lake Ontario belt and covers both little peach and yellows and has been satisfactory. The other one is located in southern Maryland, and there the results have not been satisfactory to the inspector or the orchardists; however, the inspection has been only once annually, while there should be at least three annual inspections. It is necessary to make three inspections for first-class work, and sometimes double that number is necessary. The question that is still open is whether you can control the disease in the face of such an outbreak without first losing the orchards. Mr. Hale raises the point of the possibility of the Connecticut peach orchards being entirely wiped out. That is not only a possibility but also a great probability unless you do this act of complete eradication. There is no use trying to dodge the issue. That is what has been done in the Maryland peach belt in the

early 80's and in many other States in different years, also what happened in this State once before, as I understand it, thirty years ago, and is quite likely to happen again, that the whole peach industry be wiped out. If our Department can be of help to you we would like you to advise us. Even though you have a strong State law—remember that the law is only the machine you use in doing the work. If you have a good law in regard to this disease and *enforce* it, then the law will assist.

MR. S. G. COOK: The first season that this yellows law was passed I looked over my orchard, which numbered ten or fifteen hundred trees. I found that the yellows was in a good many of the trees. I spoke to N. S. Platt about it, and he said he didn't think it was the yellows. However, I cut down every one of the trees in one bunch, and all the others that were diseased. The last day I was at work Mr. Fenn, one of the inspectors, came into the orchard and told me that I had cut down a good many more than he would have condemned, but I told him I wanted to clear it all out and I wanted to save what trees I had left. In the trees that were partly diseased I cut out every sign of it, year after year, and I think about three years after that I had to take them all out. The roots were as sound as any tree I ever saw. Many of the trees were eight inches in diameter. I can't say cutting out the limbs is of any benefit. The peaches were bitter—and that is one point not spoken of here—the fruit is very handsome in appearance, and not fit for use when the tree is affected by yellows.

PROF. WAITE: I think the gentleman's experience is particularly valuable, that his orchard only lasted three years after he cut the limbs out. The cutting out of the limbs is a very dangerous process. If his trees only lasted three years I would not expect that it would be a safe process to do it.

MR. ROOT: From what State would Professor Waite advise the buying of nursery stock for planting new orchards?

PROF. WAITE: That is rather a pointed question. I would prefer getting the trees from any of the States south

of the yellows line—from Georgia, Florida, Alabama, Texas, or California.

A MEMBER: Will those trees stand our hard winters here?

PROF. WAITE: Yes; there is no difference in the northern and southern grown stock in that respect. I would prefer to make sure that I got from outside the yellows area.

A MEMBER: Would you plant trees on the same ground after taking the old diseased trees out?

PROF. WAITE: Yes sir, but I prefer giving the ground a year's rest.

Question No. 57 from the Question List was called up and discussed.

QUESTION 57:—"Some trouble is striking at the roots of our peach trees and soon killing them. Who can tell what it is, and the remedy?"

MR. C. E. LYMAN: I notice that this trouble seems to be striking the new trees now coming into bearing. It is like club root. The life of the root seems to be gone, dead. A tree that would ordinarily require the strength of a horse to pull it can easily be uprooted by a man. Often the trouble strikes a clump of trees.

No one present was able to give any light on the question.

PRESIDENT PUTNAM: If there is nothing further on this matter of peach diseases we will pass on to the next topic on our program, which is that of the San Jose scale. This trouble is no less important to most of us than the yellows question, and I am sure we shall be glad to hear from Prof. Jarvis of the Storrs Experiment Station, who has devoted considerable attention to developing the new home-made oil remedies for the treatment of the scale.

The New Oil Emulsions For Treating the San Jose Scale.

A Home-Made Soluble Oil.

By C. D. JARVIS, Storrs Experiment Station.

Of all the remedies thus far proposed the lime-sulphur wash is undoubtedly the most popular and the most generally used. But that there is a general demand for something more convenient is evident from the activity of the various experiment station workers in proposing new remedies. Hydrocyanic acid gas, whale oil soap, kerosene emulsion, undiluted crude petroleum, kero-water (a mechanical mixture of kerosene and water), and the kerosene-limoid (K-L) mixture have all been exploited in their turn. They all had their weak points and limitations. Very few are now in use, and these only in restricted areas.

Another proof of the demand for a more convenient remedy is found in the many substitutes on the market. Every year witnesses the advent of several proprietary remedies, many of which possess merit and are meeting with a ready sale. The "soluble oils" are the most popular of these substitutes. The cost of these proprietary remedies, however, makes their use almost prohibitive for the commercial orchardist. The success following their use has led many chemists to investigate their composition with a view of discovering a method of home manufacture and thus give the fruit grower the opportunity of saving the profits which usually go to the manufacturer or his agents. Owing to their complex nature and to the difficulties in the way of their analysis progress has been slow. The formula herewith recommended is not necessarily the same as that used by any manufacturer of commercial "soluble oils."

NATURE OF SOLUBLE OILS.

The term "soluble oil," as applied to such oil preparations that may readily be diluted with water, has become so generally used that it has seemed advisable to employ it in the

present paper. When water is added to a so-called "soluble oil" it immediately breaks up into very fine particles or globules. In other words, an emulsion is formed. The oil has not been changed in any way, for under certain conditions its globules may be reunited and present the same appearance as before. In general appearance the emulsion resembles milk. As seen under the microscope also, the emulsion closely resembles milk. The only apparent difference is that the globules are more uniform and somewhat smaller. These emulsions are quite stable, often remaining in perfect condition for several months. On standing a few days, a thick, creamy layer, which may be readily redistributed throughout the mixture, will form on top. Just why these oil globules remain distinct and suspended in water so long is not well understood.

OIL VS. LIME-SULPHUR.

In comparing the value of two or more insecticides, a subject into which so many factors enter, we are very likely to overlook many important considerations. In order, then, that we do not too hastily form a conclusion with regard to the relative merits of oil and the lime-sulphur wash, for the treatment of the San Jose scale, it may be well to consider the subject under the following heads:

Efficiency. The first and all-important quality in a scale remedy is that it should kill the scale. Experience tells us that the lime-sulphur wash, when properly made, and that an oil preparation of the proper strength, will kill every scale with which they come in contact. Assuming this to be true we have simply to determine which one of these sprays is likely to come in contact with the greatest number of scales. The lime-sulphur wash usually contains an excess of lime, and, owing to the general consistency of the material, demands the use of a moderately coarse nozzle. The material necessarily must be applied in coarse particles rather than in the form of a fine mist or fog, and fails to penetrate beneath the outer layer of insects, under bud scales, or among plant hairs. The twigs of many fruit trees, more especially those of apple

and quince, are densely clothed with soft, downy hairs, among which the insect finds a very suitable hibernating place, where he will be protected from the weather and where he will be able to do the most damage in the spring.

With the oil, on the other hand, a very fine nozzle may be used and the material may be applied in extremely small particles. This feature, with the spreading quality common to oils, insures greater penetration and allows a wider margin for the careless worker.

Safety. Next in importance to the efficiency factor comes that of safety. By this term is meant freedom from any injurious effects upon the tree. The lime-sulphur wash has seldom been known to cause injury when applied to dormant trees. Many individual growers, and at least one experiment station, have reported slight injury from applications made in the autumn, soon after the leaves had fallen. Under ordinary conditions, however, it seems quite safe to use the lime-sulphur wash, either late in the fall or early spring. Our experience with oil sprays is somewhat limited, but the various commercial preparations have received a wide trial during the past three or four years and no injury, either from fall or spring applications, has been reported. In consideration of the fact that crude petroleum in its undiluted state is being used by many growers, we should certainly not expect injury from an emulsion containing not more than five per cent.

The possibility of a cumulative effect upon the trees has been suggested, but this seems to be quite improbable. Careful examination of trees six weeks after spraying with home-made oil emulsion and with some of the commercial preparations has revealed very slight traces of oil residue, probably vaseline. The amount remaining on a tree sprayed with a five per cent. emulsion would be so insignificant that it may be disregarded.

Cost. Before comparing the cost of a home-made oil emulsion with that of the lime-sulphur wash, it may be well to consider the cost of the proprietary remedies. Scalecide, for example, cannot be purchased for less than fifty cents per gallon, by the barrel. At this rate a 1-15 solution would cost

over three cents per gallon. Even at this price many fruit growers believe that they can spray their trees more economically with Sealecide than with lime and sulphur. The cause for this belief may be partly attributed to the destructive character of the lime and sulphur on the spraying equipment, but more particularly to the fact that, with its adaptability to the use of a finer nozzle, the oil spray will go almost twice as far as lime and sulphur. Admitting that there is good ground for contention in regard to a preparation costing over three cents per gallon, all doubt should be removed when we consider a home-made preparation, costing about one cent per gallon. Even when considered gallon for gallon, the home-made soluble oil is cheaper than the lime-sulphur wash, which including labor and fuel, cannot be made for less than one and one-half cents per gallon. Oil emulsion may be made at home at a cost not exceeding one and one-fourth cents per gallon, and by securing the material in barrel lots, for less than one cent per gallon.

Convenience. It is often difficult to secure a quality of lime suited to the purpose of making the lime-sulphur wash, and much of the failure to secure satisfactory results may be attributed to a poor quality of lime. The preparation of the wash requires care, time, fuel, unusual patience, and an elaborate outfit. It must be applied soon after being made, and before it has become cold. On account of its corrosive effect on the hands and face of the operator, it is hard to secure men to do the work. This is a serious objection when it is so difficult to secure and retain good men for farm work. It is true that there is some inconvenience in the preparation of a home-made soluble oil. As mentioned in another place, difficulty has been experienced in securing materials of the proper grade. When the dealers come to know the requirements and to realize the demand for such materials this difficulty may be removed. With the proper materials, however, its preparation is extremely simple, requiring much less care than an *efficient* lime and sulphur wash. It is less offensive to handle, may be made up during the slack season,

and after simply diluting it with water, may be applied when convenient.

Effect on Spraying Equipment. The corrosive action of the lime-sulphur wash is not only disagreeable to man, but its effect on pumps, barrels, hose and harness is very destructive. The life of the spraying apparatus with which the lime-sulphur wash is used is comparatively short. An oil preparation, on the other hand, seems to have a beneficial effect on the spraying equipment. It prevents rusting or corroding, and thus permits of the various parts being readily detached. Its injurious effect on rubber hose, however, while less than that of lime and sulphur, seems very pronounced. The injury appears to be a separation of the rubber from the canvas or lining of the hose. To avoid this trouble it seems advisable to use either a canvas-covered or a wire-wound hose.

Incidental Considerations. The lime-sulphur wash, aside from being a scale remedy, has long been considered the best remedy for another insect known as the pear psylla (*Psylla pyricola*), and for the disease known as peach leaf curl (*Eriosema deformans*). It is also believed to have an invigorating effect on certain fruit trees, more especially the peach and plum. Oil preparations seem to exert a similar influence, especially on the pear, but the extent of which is not yet determined. It is hoped that some fungicide may be found that may be safely added to a "soluble oil," and thus produce a combined scale destroyer and fungicide. The manufacturers of Scalecide claim to have recently improved their preparation by the addition of a fungicide. Professor Gossard of the Ohio Experiment Station, in speaking of the soluble oils in general, observes that "these oils, when applied to peach, appeared to have a distinct fungicidal value, whether or not equal to that of lime and sulphur, we cannot judge." The fungicidal value, however, has not yet been clearly demonstrated.

Recapitulation. In summing up the various advantages and disadvantages of these two insecticides, it is evident that under ordinary conditions the oil spray is more efficient, is as free from injurious effects upon the tree, decidedly cheaper,

decidedly more convenient, and less destructive to spraying equipment. In view of the absence of coloring matter it is especially valuable around home grounds or roadsides and in parks. The various commercial preparations, such as Scalecide, Kil-O-Scale, Sure-Kill, and Target Brand Scale Destroyer, are very convenient for the man with a few trees to spray. In view of a "soluble oil" prepared according to the formula herewith recommended, being offered for sale by several firms at a much lower figure, the cost of these preparations may ultimately be reduced. The chief advantage of the lime-sulphur wash over oil sprays consists in its influence in controlling the leaf curl, and its invigorating effect on the tree. Where leaf curl is present, an occasional application, one in two or three years, is recommended.

THE EMULSIFIER.

The value of crude petroleum as an insecticide has long been known. In its undiluted condition it is injurious to vegetation, yet under very favorable conditions it may be used on dormant trees, for the destruction of San Jose scale. Not only is the undiluted petroleum unsafe, but it is decidedly too expensive. By means of mechanical contrivances or "emulsion pumps" attempts have been made to apply oil in a diluted condition. Such contrivances were a partial success, but were not reliable, and their use has been practically discontinued. Chemical reagents must, therefore, be depended upon to bring the oil into such a condition that it may be readily diluted with water. The combination of chemicals used to bring about this condition is termed the *emulsifier*; the resultant oil after it has been acted upon by the emulsifier is termed the "*soluble oil*," and the diluted "soluble oil" is called the *emulsion or spray mixture*. The formula for making the emulsifier is as follows:

Carbolic acid (liquid crude 100%)	2 quarts
Fish oil (Menhaden)	2½ quarts
Caustic potash (granulated)	1 pound
Heat to 300° F., remove from fire and immediately add	
Kerosene	3½ quarts
Water	5½ quarts

This formula is sufficient to make slightly more than three gallons of the emulsifier, 15 gallons of the complete "soluble oil," or 240 gallons of the emulsion ready for spraying.

The carbolic acid, fish oil and caustic potash should be deposited in the kettle before the fire is started. The mixture should be slowly stirred for a few minutes after the fire is lighted, or until the potash is dissolved, at which time the cover should be placed on the kettle to prevent loss from steaming and evaporation.

The cooking is best done in an iron kettle. The ordinary caldron kettle, commonly used on the farm for making soft soap, will answer the purpose. A large kettle is not necessary, for, as may be seen from the above formula, slightly over one gallon of the cooked mixture (carbolic acid and fish oil) is sufficient to make 240 gallons of spray mixture. The kettle should be supplied with a close-fitting cover, through which has been bored a small hole to accommodate a perforated stopper, by which the thermometer is held in place. A thermometer about 18 inches long and graduated from 200° to 310° F. will be most suitable. The graduated portion should be restricted to the upper end so as to project above the cover. Any good thermometer graduated to about 310° F. will answer the purpose. If not long enough to reach the liquid in the kettle, it may be lowered through the hole in the cover by means of a string. Thermometers of various descriptions may be secured from Eimer and Amend, 205-211 Third Avenue, New York. The kettle should not be more than half filled, to allow for foaming, and in view of the hot mixture being somewhat *inflammable*, the fire should not be allowed to blaze above the edge of the kettle. When the temperature approaches 260° F., the cooking requires close attention, and if the mixture foams up near the top of the kettle, it may be advisable to subdue the fire for a time, or until the temperature reaches 270°, when the foaming ceases. Under no circumstances should the cooking be done in or near a building, unless, of course, a steam coil or jacketed kettle is used. If steam to a pressure of about 60 pounds is available, a jacketed kettle will be found most convenient. The operation of cooking,

whether done over a fire or by steam, should not require more than 30 minutes.

When the required temperature is reached the kettle should immediately be removed from the fire, or the fire quickly subdued by means of sand or dry soil. The hot mixture should be transferred to a larger vessel, and the kerosene immediately added, then the water. Serious results may occur if the water is added before the kerosene. Both the kerosene and water should be poured in slowly while the whole is being stirred.

The emulsifier, when properly made, and at the ordinary temperature, is quite liquid, somewhat stringy, and when held in a glass to the light, of a clear, reddish-brown color. It remains in good condition indefinitely—a sample at the end of 18 months was found to be just as efficient as at the beginning. In view of its keeping quality it may be made up during rough weather or slack seasons.

THE "SOLUBLE OIL."

Although the "soluble oil" remains in good condition for a long time, it seems advisable to delay its preparation till spraying time. It is readily made up without the application of heat. After thoroughly stirring up the emulsifier, the ingredients are simply brought together in the following order:

Emulsifier	8 parts
Crude petroleum	23 parts
Rosin oil	4 parts
Water	1 part (more if necessary).

When the materials are brought together in the above proportion they should be vigorously stirred. With large batches a garden hoe may be conveniently used for this purpose. At first the mixture when stirred will appear thin and sound harsh, but soon becomes somewhat thicker and smoother. When this condition is attained the soluble oil is complete. A test may be conveniently made by pouring a few drops in a glass of water. A white or milk-like emulsion should be the result.

In view of the variable character of crude petroleum the proportion suggested above occasionally fails to produce a

soluble oil. As a rule a slight increase in the proportion of water will produce the desired effect. The proportion of crude petroleum herewith recommended, it will be noticed, is considerably greater than that recommended in Bulletin No. 49 of the Storrs Experiment Station. The quantity which may be used depends greatly upon the quality of the crude petroleum and to some extent upon the efficiency of the emulsifier. With a well-made emulsifier and a good quality of crude petroleum as many as 45 parts of the latter have been used with excellent results. The emulsifier and the rosin oil being the more expensive items in the production of a soluble oil, it is important that they be made to carry as much crude petroleum as possible. In other words, the cost per gallon of soluble oil is reduced by increasing the proportion of crude petroleum. *Before making up large quantities of "soluble oil" it seems advisable, therefore, to ascertain by experiment how much crude petroleum may be used.* In some instances it may be found that the proportion of 23 parts is too high. Of a great many samples tested, however, only one failed to permit of its use in the proportion. If, after carefully following the directions and after increasing the proportion of water, a suitable "soluble oil" is not produced, it may be accomplished by reducing the proportion of crude petroleum. It would appear from the foregoing that the successful preparation of a "soluble oil" is a very difficult and uncertain undertaking. Such is not the case, for under ordinary circumstances, many of these instructions, explanations and precautions are unnecessary.

MATERIALS.

A few reports have been received from fruit growers to the effect that after carefully following the directions given in Bulletin No. 49, they have been unsuccessful in making up a soluble oil. In every case the failure has been traced to the door of the local druggist, who either deliberately or unintentionally misrepresented the materials used. It is extremely important that the materials used in the emulsifier are of the proper grade. The only safe course to pursue is to secure

materials directly from the large producers or distributors as indicated in the following, except, of course, in a small way for trial. If the local druggist is willing to assume the responsibility and if the materials are secured at a reasonable price, it would certainly be advisable to patronize a local concern. Materials are sometimes offered at a suspiciously low price. A New Jersey fruit grower who recently inquired for information with regard to materials, incidentally mentioned the fact that he could secure liquid crude carbolic acid, 100%, for 35 cents per gallon in small lots. He was promptly advised to secure his materials from another source, for the reason that the largest producers of carbolic acid in America were quoting liquid crude, 100%, at 52 cents per gallon by the barrel. The standards for many materials used in the work are based upon a specific gravity test, with which the average fruit grower is unfamiliar. For this reason he must depend upon the dealer to supply the proper materials. It is, therefore, important that only responsible dealers are patronized. Undoubtedly several local concerns, especially those who cater to the agricultural trade, will handle the proper materials when they come to know what is wanted, and to realize the demand for such. The Sisson Drug Company, Hartford, Connecticut, claims to have a complete stock of the proper materials for the preparation of "soluble oil."

For the benefit of those who require small quantities of "soluble oil," and for those who wish to avoid the trouble of making it, arrangements have been made with the John T. Robertson Company, Manchester, Connecticut, to make up and offer for sale a soluble oil after the formula herewith proposed.

"Soluble oils" are very easily adulterated or diluted. The addition of water to a certain limit thickens the material and gives the impression that it might be of better quality. The dishonest agent may take advantage of this fact and lead the purchaser to believe that he is selling a soluble oil of superior quality. An adulteration of this kind, however, may usually be detected by the muddy brownish appearance of the mixture.

In order to secure materials at the lowest rate and to

reduce transportation charges, fruit growers would do well to combine orders. If such arrangements cannot be conveniently made, it will pay the average fruit grower to order his materials in barrel lots, and carry them over from one season to another. In view of the wide fluctuation in the price of these materials it may often prove profitable to purchase a large supply while prices are low. In tight barrels there would be practically no shrinkage.

CARBOLIC ACID.

Crude carbolic acid is sold at various strengths, ranging from 20 to 100 per cent. Local dealers seldom carry the higher grade, for the lower grades usually satisfy the demand. None but the 100 per cent. grade is suitable for our purpose. This grade comes in two colors, designated as "straw color" and "dark." The latter is usually about four cents per gallon cheaper and apparently suits our purpose as well. Orders for carbolic acid, then, should distinctly call for "*liquid, crude 100%, dark.*" The Barrett Mfg. Co., Frankford, Philadelphia, Pa., quotes this grade at 52 cents per gallon, by the barrel. The prices fluctuate considerably, and at the present time are very high.

FISH OIL.

Any pure fish oil will answer our purpose, but that known as *Menhaden oil* is much cheaper in this section of the country. The cheaper grades used by the veterinarian will not saponify, and are, therefore, unsuited to our purpose. Fish oil adulterated with mineral oils is often found in commerce and is also unsuited to our purpose. The oil at the bottom of a can or a barrel is often very thick and granular. This is somewhat inconvenient to handle, but works almost as well as the liquid portion. The firm of Marden, Orth and Hastings, 225 Purchase Street, Boston, Mass., is one of the largest and most reliable producers of fish oil in this section. Messrs. Heller, Hirsch & Co., 62-64 William Street, New York, produce fish oil of good quality. The prevailing price is about 37 cents per gallon by the barrel, and 40 cents in smaller lots.

This price is extremely high. Fish oil of good quality may usually be obtained for about 30 cents per gallon.

CAUSTIC POTASH.

Caustic potash of commerce is usually either in stick form or in coarse lumps. If either of these forms is used, it must first be dissolved in its own weight of hot water. The most convenient form, however, is that known as "granulated" or "ground" caustic potash, in which form it may simply be added to the other ingredients, without the addition of water. Much of the caustic potash in commerce contains large quantities of caustic soda. This is not a serious objection, but the presence of soda tends to make the emulsifier thick. Rabbitt's lye, commonly used for making soft soap, and composed almost wholly of caustic soda, has been successfully used. The potash, however, gives uniformly better results and is recommended. The General Chemical Co., 608 The Bourse, Philadelphia, Pa., produces an excellent quality of "ground caustic potash, 92%," at eight cents per pound by the hundred, or at 10 cents in smaller quantities.

ROSIN OIL.

Rosin oil is a heavy vegetable oil produced as a by-product in the manufacture of turpentine, and is largely used in the manufacture of varnish. There seems to be a confusion of terms as applied to this oil. Four distinct grades, first run, second run, third run, and fourth run, are recognized. Some firms quote the first run as highest in price, while others quote it lowest. It is sufficient for us to know, however, that the lowest priced grade suits our purpose as well as, if not better, than the higher-priced grades. The American Naval Stores Company, 21-24 State Street, New York, the largest distributors of this commodity in the country, quote first run (lowest grade) at 23½ cents per gallon by the barrel.

CRUDE PETROLEUM.

Crude petroleum varies greatly in composition, due chiefly to the widely separated sources of supply and partly to the variable product of the individual well. Sometimes it con-

tains a dark, granular substance, which causes a dark colored emulsion, or, if very abundant, prevents the formation of an emulsion. Before using crude petroleum of this nature it should be strained through four thicknesses of cheese-cloth. Crude petroleum is subject to slight fluctuations in price, but may usually be obtained for about 11 or 12 cents per gallon. The Standard Oil Company quote it at 12 cents by the barrel, at their nearest shipping point. The Derrick Oil Company, Titusville, Pa., quote it at $12\frac{3}{4}$ cents, delivered at any station in Connecticut.

Kerosene, which is a refined product of crude petroleum, may usually be purchased at $8\frac{1}{2}$ or 9 cents per gallon by the barrel.

DIRECTIONS FOR USE.

The necessary materials should be ordered long before spraying time arrives. The quantity required will depend upon the number and size of the trees to be sprayed. The amount of spray material required per tree varies from one quart for young trees to five or six gallons for large apple trees. For every 1,000 gallons of emulsion or spray mixture, approximately the following quantities are required:

Carbolic acid	$2\frac{1}{4}$ gallons
Fish oil	$2\frac{3}{4}$ gallons
Caustic potash	5 pounds
Kerosene	$3\frac{3}{4}$ gallons
Crude petroleum	40 gallons
Rosin oil	7 gallons

One gallon of "soluble oil" to 15 of water is recommended, although a weaker mixture, 1 to 19, has produced good results. If the "soluble oil" has been standing long after being made, it should be thoroughly stirred before using. When satisfied that it will readily mix with water, three gallons may be poured into a fifty-gallon spray barrel, which is afterwards filled up with water. This will give approximately the proper proportion.

It is extremely important that clean utensils be used. A barrel in which Bordeaux mixture has been used is unsafe for oil emulsion unless very thoroughly cleansed. The small

amount of copper sulphate which clings to the inside of the barrel is enough to cause a separation of the oil and water. Lime and sulphur have a similar influence, but this mixture acts more slowly. Neither arsenate of lead or Paris green has shown any such tendency.

The use of the agitator is not essential, but is recommended, especially when only one or two nozzles are in use and the emulsion is pumped out slowly. An occasional stirring with a dasher of some kind will answer the purpose.

Thoroughness of application is of utmost importance; every portion of the tree must be covered with a film of oil. The spray should be expected to kill only those insects that it touches. The progeny in one season from a single surviving scale is enormous and may run up into the millions. In the case of badly infested orchards two applications are recommended, one in the fall and the other in the early spring. As a regular practice, however, one thorough application a year should keep the insect in check. With the use of a fine nozzle and abundant power, more thorough and more economical work may be done. Many insects hibernate under bud-scales, and among plant hairs, and will escape the spray unless it is applied with sufficient force through a fine nozzle. It is more difficult to detect faulty work on the part of the operator with oil than with lime and sulphur, and for this reason, the spraying should be delegated to trusty men. With large apple trees, one man should spray from the ground, to cover the lower parts of the branches, and another from a tower on a wagon to spray the upper surfaces of the lower branches.

If a rain should occur within twenty-four hours after spraying, or before the water in the emulsion has evaporated, a second application may be necessary. After the water has evaporated the oil is unaffected by the rain and will remain until it also has evaporated.

TIME TO SPRAY.

Like the lime-sulphur wash, oil emulsion at regular strength must be applied while the trees are dormant. The insects that live over winter are those of the last brood, which

are born just before the leaves drop in the fall. At first their scaly covering is very thin and is not firmly attached to the bark. From this it would seem that the insect is more susceptible to treatment in the fall. However, so far as killing the insect is concerned, equally good results have followed spring application. It is evident that badly infested trees suffer from the presence of the scale during the winter months, at least during the fall and early in the spring before the spraying is commenced. In view of this fact and because of its greater convenience, fall spraying is recommended. It must not be understood, however, that this is the only time, for it may be successfully done any day, from the time the leaves drop in the fall till the buds commence to swell in the spring, providing the temperature is above freezing point.

AS A SUMMER SPRAY.

If for any reason a serious infestation should present itself during the summer, a few weak applications of oil emulsion may often save a crop of fruit from injury. In view of the fact that a solution weak enough to avoid injury to the tree will kill only the moving scales, or those under two days old, repeated applications, every few days until the fruit is about to mature, will be necessary. This is out of the question when large orchards are to be considered, but with small, restricted areas in the orchard, or in the nursery, it is quite feasible. The exact strength that may be safely used with the various kinds of fruit trees is yet to be determined. The results of the past season, however, seem to indicate that a 1 to 30 may be safely and effectively used with apples, pears and peaches. The condition of the weather seems to have considerable influence upon the degree of injury. Trees in foliage that were sprayed on a cloudy day were less seriously injured than those sprayed on a clear day.

ORCHARD TESTS.

1. *At Meriden.* On November 19, 1907, in the presence of a few prominent fruit growers of the state, the writer prepared a batch of soluble oil sufficient to make 2,500 gallons

of emulsion. The work was done at the home of Mr. E. M. Ives, Meriden, who commenced spraying on the following day an apple orchard of about 100 trees, many of which were over 20 feet high. A few leaves were clinging to the trees when the spraying was done. The orchard was moderately infested with scale, and many trees, especially their higher branches, were seriously infested. In some places, the bark was deeply incrustated. A 1 to 15 emulsion was used, and the spraying was thoroughly done. As much as ten gallons of liquid was used on some of the larger trees. The day was partly cloudy, with a gentle breeze from the south.

On January 2, 1908, a general inspection of the orchard showed that the spraying had been effective. A critical laboratory examination of some badly infested twigs from various parts of the sprayed trees, failed to show the presence of a single live scale.

2. *At Wallingford.* Ten gallons of soluble oil was sent to Mr. A. T. Henry of Wallingford, who used it at a 1 to 15 strength on several hundred young cherry trees. The scales were very scarce, but a few trees were quite seriously infested. An examination of several infested twigs taken from the sprayed trees, like the previously described experiment, failed to reveal the presence of a single live scale.

3. *At South Glastonbury.* Mr. J. H. Hale sprayed several hundred four-year-old apple trees with an emulsion made up according to the formula previously described, but the emulsifier used was prepared by the John T. Robertson Company, Manchester. The second part of the formula was prepared by Mr. Hale. A 1 to 20 emulsion was used, and the spraying was done the latter part of November.

On January 2, 1908, thirteen twigs were taken from various sections of the orchard. On twelve of them every scale was apparently dead. On the other twigs several live scales were found on one side only, which would indicate that the twig had not been completely covered with the oil. This shows the importance of thorough spraying.

DISCUSSION.

A MEMBER: Respecting the temperature—how do you tell when you get it 300 degrees? Most all our thermometers only register to the boiling point.

PROF. JARVIS: I have here a thermometer which I have used for this purpose. It is graduated from zero up to 330 degrees. This particular thermometer may be secured from the Eimer & Amend Company, 211 Third Avenue, New York. The price is \$1.00. There are different types of thermometers and I would suggest one graduated from 200 to 310 degrees; have the graduation at the top of the thermometer so to project above the cover of the kettle. The kettle should be provided with as tight a fitting cover as possible, which prevents loss from steaming and foaming. It is well to have the tight fitting cover and a hole bored through the cover, through which a perforated stopper may be placed, a hole just large enough to accommodate this thermometer. It is held there in position, and you can see at anytime the temperature as it rises. The kettle should not be more than one-third or one-half full, at least, to allow for foaming. At a particular stage in the cooking the foaming amounts to considerable, and it may be necessary to subdue the fire at that time; when it reaches 225 or 260 degrees then the foaming ceases.

A MEMBER: Have you this mixture that you can send out?

PROF. JARVIS: For experimental purposes only; we cannot attempt to make it for the trade. I wish we might, as we would then get it in more general use throughout the State. Arrangements have been made with a Manchester soap firm, J. T. Robertson & Company, to produce a soluble oil, after the formula recommended here. They are not just satisfied yet in regard to the price they may furnish it at, but it will probably be from thirty to thirty-five cents a gallon by the barrel. This firm is thoroughly reliable, and if anyone wants it in small amounts and do not feel like making it up themselves, you may write this firm and they will furnish it, also the emulsifier.

A MEMBER: What is the purpose of the carbolic acid and rosin oil?

PROF. JARVIS: An emulsion may be made without the use of carbolic acid, but the action of carbolic acid is in itself an emulsifier. It will turn white when put into water, and assist very greatly in emulsifying. The action of the rosin oil is similar. It is an emulsifier, but just how it acts I am not prepared to say. This subject of emulsifying is a complicated one, and very few know anything about it. If kerosene is used entirely, you may avoid the use of rosin oil; kerosene is not as efficient as an insecticide as petroleum. It takes about 20% solution or emulsion to kill the scale, while we have only 5% of oil in our mixture when it is sprayed. The crude petroleum is much more effective than kerosene.

A MEMBER: In making up this second mixture in which you have said we might sometimes use a larger amount of crude petroleum, how can we tell, what guide have we?

PROF. JARVIS: Simply by experiments. Make up a small batch and you can tell by the appearance. It immediately emulsifies if it is all right, if it is not you will see the oil on top of the water.

PRESIDENT PUTNAM: We are now to have an address on the practical handling of the scale in the orchard. The gentleman who is to speak to us is an extensive fruit grower from Western New York, and has had an experience of eight years or more in fighting the pest with various remedies. I am sure we shall all be glad to hear from Mr. S. Seward Hopkins of Youngstown, N. Y.

Eight Years' Experience with the San Jose Scale in Our Orchards.

By S. SEWARD HOPKINS, Youngstown, N. Y.

Mr. President, Members of the Connecticut Pomological Society, Ladies and Gentlemen:

I am glad to be present at this meeting, though for your sake, I sincerely regret that my father was unable to attend, as the first edition is always the best. As this

is my first visit to your State, and being unfamiliar with your local conditions in regard to fruit growing and spraying, it will be necessary for me to confine myself to the industry in Western New York, particularly the Niagara Frontier, and my own personal experience in the growing of fruit.

The fruit district with us is comparatively level, consisting generally of a dark surface soil and clay subsoil, with patches here and there, particularly along the river and lake, of sand and gravelly soil well adapted to peaches, and on which the great bulk of the peaches of Niagara County are grown.

My father commenced planting commercial orchards about thirty years ago, and we have continued to plant and replant ever since, until now we have upwards of four hundred acres under cultivation, consisting of apples, pears, quinces, plums, prunes, peaches and cherries. Beginning with the cherry we have almost a continuous gathering of fruits until the last of the apples are harvested.

The eighty acres of apples consist mostly of Baldwins and Greenings, planted about thirty years ago. The Quince orchard of about 1,200 trees was planted about the same time. They have borne almost yearly crops since six years old. The scale has never bothered them sufficiently to require spraying for it, though we find it necessary to apply the Bordeaux Mixture, at least three times to prevent the black spot on leaf and fruit. We consider the Quince, the Niagara Plum, and the Sour Cherry practically immune from the scale, for during the eight years that the scale has been with us, we have never had to treat any of these varieties, even when surrounded by other infested fruit trees.

We have about 10,000 pear trees, growing; principally Bartlett, Keiffer and Duchess, of various ages, and often gather upwards of three thousand barrels of fruit, which is readily disposed of. Before the advent of cold storage the ordinary life of the Bartlett was about a week

after harvesting, and it was no uncommon sight to see them sold on the Buffalo market for from 75c. to \$1.00 per barrel. With present facilities for handling them we get from \$3 to \$5 per barrel. We endeavor to give our pear orchards clean cultivation and spray them twice with Bordeaux. We try to go through them once in ten days and cut out the blight during the season when it is bad. Formerly we headed them back quite severely, but one or two seasons of bad blighting, on top of our heavy pruning, caused us to do away with our pruning of them to a great extent.

Our plums are principally Niagaras, Lombards, and Gold Drop. Our prunes, the Fellenberg variety. We never fail in having a crop of some variety and frequently of all. They are also given two or three sprays of Bordeaux. In our early experience with prunes they would make quite a growth up to the last of July, then the fungus would ruin the leaves, which would drop, and afterward in September start a new growth and the trees would go into the winter in bad shape. Since spraying, they and the Lombard Plums carry a rank foliage all through the season.

A portion of land occupied by one of our peach orchards has been growing peaches the past 70 years with scarcely any interval elapsing between the removing of the old orchard and the planting of the new ones. Nine years ago we removed an old orchard, principally Early Crawford, that was badly infested with "yellows" and "little peach." We cultivated the land one year and the following year planted it to Reeves' Favorite, Elbertas and Late Crawfords, and it has borne abundantly for five consecutive years. The sales from this orchard of twenty acres, the present year, were upwards of \$9,000, exclusive of packages or commission. This orchard, now eight years planted, was examined by Government inspectors this season, who found less than twenty trees with "yellows" or "little peach." Since giving our peaches yearly applications of the lime-sulphur wash, I have observed a

PLATE III.



J. H. HALE,
South Glastonbury, Conn.



S. SEWARD HOPKINS,
Youngstown, N. Y.



PROF. L. B. JUDSON,
Ithaca, N. Y.

SOME OF THE SPEAKERS AT OUR ANNUAL MEETING.

marked decrease in the amount of yellows and little peach in our orchards. Within three miles of this orchard, on either side of the river, there are farms of 100 acres each, portions of which are well adapted to fruit growing, where the sales from the entire farm would not amount to the returns from an individual acre of this orchard. The owners are living principally upon scenery.

About eight years ago the San José scale appeared in our orchards, coming from an infestation in Canada four miles away. We think it was carried by crows which migrated back and forth and made their nests in our large apple orchards. At first we received very little practical assistance from our Experiment Stations. I often think of the crude way we started in to prepare the lime and sulphur in iron kettles and applying it with antiquated hand-pumps. We had about concluded if we had to fight it on our four hundred acres of orchard, that we would surrender. If Will Carleton could have been with us at that time, we can imagine him saying, "Storm and Tempest, blight and fungus, o'er our orchards may befall, but for first-class ruination, put the scale against them all."

The fall that we first found scale in our orchards we marked all infested trees when we were picking the fruit and treated them the following spring as best we could with Kerosene Emulsion and whale oil soap. As we had no conveniences for treating the whole orchard, we did the same thing the next year. We seemingly checked it some, but of course were not doing thorough enough work to hold it entirely in check, and the third year of this treatment we could see that we must do more spraying if we were going to save our orchards.

Our Greenings were much the worse infested, while among our Baldwins it seemed to be in spots here and there throughout them. The next application we sprayed most of our Greenings and the parts of our Baldwins where it was making most rapid progress. We kept increasing our operations until two years ago, with most discouraging results. At that time our Greening orchard was so bad that we took

part of it out and the remainder we sawed the limbs off to three or four feet from the trunk, to start a new top. Our Baldwins, though none of them had to come out, there was scarcely a tree that you couldn't find live scale on, and the next winter we took the top story off of them.

A year ago last Spring we put two power rigs in the orchard the greater part of April. Spraying with lime and sulphur all that we could, and finishing up with oil and doing thorough work, and the following season, which saw the scale spread more than all the preceding years that it had been in our locality, we had the least scale in our main orchards that we had had since we started spraying, and we were able to sell our apples at the top market price with practically no loss from scale.

Last year we sprayed more thoroughly than ever and the results make us believe that we have won out. Our pears and plums became infested about the same time as our apples. We have used the lime and sulphur on them almost exclusively. Five years ago we had a Fellenberg prune orchard so badly infested that we could not market a large part of the fruit. The next year we commenced spraying the entire block, and a year ago we packed about 15,000 baskets of prunes from the same orchard, and I don't believe you could have found a basket full of scaly fruit in the whole lot.

In our various orchards at present we have three eight to ten-horse power boilers with elevated vats for cooking the lime-sulphur and crude oil emulsion, and use four power sprayers and two hand sprayers. In spraying for scale we use three remedies: pure crude oil, lime and sulphur, and crude oil emulsion. The crude oil we use in our large apple orchards, put on just before the buds open. This treatment we recommend as a last resort where the trees have been badly neglected. In applying the oil we use one very fine nozzle with plenty of pressure; we endeavor to commence at one point on a tree and proceed from there over it, being careful not to cover the same parts more than once, for, just as soon as you do, you are endangering the tree.

We do not consider it safe to use the oil consecutively year after year. When we have used the oil one year, we endeavor to use the lime and sulphur the next.

The lime and sulphur treatment we use more extensively than either of the others. The formula we use is: 17 pounds of lime, 17 pounds sulphur, to 50 gallons of spray. We cook it in vats elevated high enough to drain into our spray tanks and use large molasses faucets to draw off the prepared solution. At one of our cooking stations we have a steam pump connected with the boiler to elevate the water. At the other two we use large threshing pumps. We usually prepare a hundred gallons at a time, and at each station have two vats, so that there is one ready all the time. A hundred gallons is about all we can draw through our orchards at the time of spraying. In preparing a hundred gallons we first pump about thirty to forty gallons of water into our cooking vat, and turn the steam into it, bringing it to a boiling point. Then we put in our lime, which is good fresh lime, and it soon commences to slake in the boiling water. When the lime is pretty well slaked we put in our sulphur and stir and cook for at least an hour. The results obtained with the lime and sulphur depend entirely upon the thoroughness of the application. There is no danger of getting on too much and there is no reason why we can't control the scale on all our orchards with it, except our apples, and I believe we can hold it in check on them where they are not over large. In applying it we always spray with the wind. We use two leads of hose with each rig. In our smaller orchards we spray one side of two rows at a time, the men who spray both walking. While, in our apples, one man sprays from the tower and the other with at least a ten-foot rod from the ground, spraying one side of a row.

The crude oil emulsion we prepare by putting thirty or forty gallons of water in spraying tank, then put in twelve or fifteen pounds of whale oil or other soap, and boil until soap is dissolved. Then pump fifty gallons of oil into the tank, keeping the steam turned on all the time and the agi-

tator going. Then fill the tank to two hundred gallons. We used this preparation quite extensively last year on everything except peaches and had excellent results, not only in killing the scale, but in the thrifty appearance of the tree. You can apply it quite freely without danger of injury. We made a test of it, taking out three samples: one, after the tank was filled, one after it was about half sprayed, and the last when it was just about gone, and found that the three samples contained practically the same amount of oil when properly prepared. I see no reason why this remedy isn't as good as any of the patent soluble oil remedies that are springing up all over the country, and a great deal cheaper.

There has always been great fear among small fruit growers that soon there would be an over-production and no remunerative market, as, in 1896, when fine apples sold from fifty to seventy-five cents a barrel and other fruits in proportion. This San José scale should allay your fears on that score. While there are exceptions in all scale infested districts of orchards seemingly immune, the general rule is that these untreated scaly orchards are fit for the brush pile in from three to five years. One might as well hope to grow potatoes without spraying to eradicate blight and potato beetle, as to think of growing high-class fruit without the use of spray, in a scale-infested district. Such persons had better quit the business or, what is better, never get into it. The general distribution of the scale throughout the Continent has been brought about by planting nursery stock, especially affected trees. Professor L. O. Howard of the U. S. Department of Agriculture tells us that in spite of the wide dissemination of scaly fruit in this country, and to some extent abroad, there is not a single authenticated instance of scale having been established on the tree from such source.

After all, the great question in scale-infested districts is, Does fruit growing pay? After all its uncertainties, when three, four or five years ago it seemed as though the scale would ruin all our orchards, it now seems like getting back

what we thought was lost. The present season was unfavorable for many varieties of fruit, though prices were high. We received from all our orchards upwards of \$26,000, after deducting the amount paid for help, spraying material and machinery. For my part, I am satisfied.

DISCUSSION.

A MEMBER: Do you spray large apple trees from more than two sides?

MR. HOPKINS: Our orchards are about thirty years old. I think where the trees are very large they should be sprayed on all sides, although we never have done this, as we have been able to kill the scale by spraying on two sides; of course, a favorable wind helps.

A MEMBER: You spoke of spraying with lime and sulphur, and with oil the alternating season. Why don't you spray with lime and sulphur every season?

MR. HOPKINS: We do when we have time; we use gasoline power in the work.

A MEMBER: What does your oil spray cost you approximately for the material?

MR. HOPKINS: I think, ordinarily, our oil costs us ten cents a gallon; five dollars for fifty gallons.

A MEMBER: You do not spray anything but your apples?

MR. HOPKINS: We do, everything but peaches.

A MEMBER: Do you use the oil on plums?

MR. HOPKINS: I would not advise its use on plums; there are only a few plums in this orchard I refer to.

A MEMBER: You would not use it every year on your apple trees?

MR. HOPKINS: Last year was the first year that we used it extensively; I don't see why we wouldn't; we shall use it more in the future.

MR. J. H. HALE: Mr. President, it has been our custom to appoint a committee on nominations for the various officers of the Society. I move that a committee be named by the

Society to submit a list of officers to be voted for at to-morrow's election.

Motion was seconded and passed.

The following committee was then elected:

J. S. Forbes, Hartford County.

J. N. Barnes, New Haven County.

J. M. Hubbard, Middlesex County.

Edwin Hoyt, Fairfield County.

C. S. Phelps, Litchfield County.

Chas. A. Gray, New London County.

O. F. Atwood, Windham County.

Andrew Kingsbury, Tolland County.

The time for adjournment of the afternoon session having arrived, at 5.30, a recess was taken until the evening session.

EVENING SESSION.

This year's evening session will long be remembered as one of the most enjoyable gatherings ever held by the Society. The attendance of the members and their friends was excellent, much larger than at any previous evening meeting, and the pleasure of the occasion was increased by the presence of many ladies in the audience.

The stage, with its decorations of plants and flowers, the exhibits and mounds of bright-colored fruits, made a wonderfully attractive picture, and the quantity of fine apples piled in front was suggestive of the "feast" to come later.

The Beeman and Hatch orchestra was stationed in the background, and for a half hour previous to the opening of the session rendered a number of enjoyable selections.

The promise of "a feast of good music, good speakers and good fruit," as given on the printed program, was

fully carried out in the exercises of the evening, to the satisfaction and pleasure of all present.

Mr. J. H. Hale, the chairman of the evening, called the meeting to order at 7.30, and welcomed those present in behalf of the Society. He explained that the leading topic of the session would be, "Encouraging the Use of Fruits of High Quality," and that the important subject of "Quality in Fruits" was to be considered from the standpoint of both the grower and the consumer. He said he was glad to see so many of our city friends present, and hoped that this effort of the Society to bring the consumers and growers of fruit into closer relations would be productive of mutual pleasure and profit.

"We need," said Mr. Hale, "to get in closer touch with you, to learn your wants and also to educate you, as well as ourselves, as to what constitutes fruit of the highest quality. We believe the consumer to-day wants fruits of the best quality and is willing to pay what they are worth, and it should be our business, as growers, to supply such high-grade products, rather than the poorer second-grade fruit with which the markets are too often filled."

Mr. Hale announced that at the conclusion of the speaking, the audience would be invited to test the samples of fruit that had been provided, and compare the different varieties as to their quality.

The first address of the evening was then given by Mr. Hale, on "Quality from the Grower's Standpoint."

"Quality From the Grower's Standpoint."

By MR. J. H. HALE.

The first thing is money. That we must have to pay for our labor and fertilizers and all the other things that come in. We have been producing, and probably for a long time shall keep on producing the fruit which the markets will take and pay for at the highest price. We must produce something that the market demands. The man who tries to educate the

consuming public to pay according to quality will do good missionary work, for he has to pay the bill, the consumers won't do it. The average consumer will let you pay the bill for encouraging the producing of high grade fruit. You will have to pay the bills and they will be expensive bills, but any kind of education is costly.

I have been growing small fruits all my life, and a high quality of berries. The Palmer, one of the earliest strawberries—a most delicious quality, but in no market will they pay any more for it than the ordinary kind. Then there is the Banquet strawberry, which has the real flavor of the wild berry, and yet you can't get a retailer to handle it, as not one customer out of a hundred would pay a cent or two more a quart for it than the ordinary berry. So, with the Antwerp raspberry. The red Antwerp is probably the choicest of all that are grown, but it needs especial care in the winter, and if the public desire the Antwerp they must pay the extra expense of raising them. I have never been able to get any more money for the finest quality of raspberry than I got for the Cuthbert, and the Cuthbert grows more freely and bears more abundantly. Then there are the blackberries, the Lucretia, a most delicious berry, not like the big, punky Lawton, and yet the public ask for the Lawton, and we are giving the public what they will pay for. You will find a few customers who will take the Crosby peach and Hill's Chili, two of the most delicious peaches in America. Put a basket of Elbertas, which are not much better than the Ben Davis apple, and the consumer will say, "Give me the big ones." In the general markets of this country the public will buy twice as many Elbertas as Hill's Chilis or Crosbys. The same is true of the old Morris White, one of the most delicious peaches that can be grown. Do you see many of them on the market? The consumers don't want them. The Seckel pear is an exception to this rule. More of that variety of pear is sold for its quality than any fruit we grow. We can grow the best quality of fruit, but the dear public don't want to pay for it, and half the consumers will buy inferior fruit in preference to the best quality.

Is it encouraging for the fruit growers? Many of you are willing to pay an advance price for various food products on the market and pay for quality, but when it comes to fruit, that is a different thing. If it looks right on the outside sometimes when you open your package you find that quality does not continue throughout the package. We may offer perfectly sound, ripe peaches that are delicious, absolute perfection for consumption to-day, and yet we can sell them for only about one-quarter price. People had rather buy something that is hard and tough, not fully developed. They think they can keep it a little longer. Fruit of the high quality don't sell for what it is worth. Ninety-five per cent. of all the consumers purchase fruit judging with their eyes rather than their mouth. There are about five per cent. of the people who know a good thing and appreciate it and are willing to pay for quality, for first quality. We can hardly afford to carry on our horticultural operations for the benefit of that five per cent. All of us fruit growers grow the choicest fruit for ourselves and for our friends and neighbors, and I think we have surplus to take care of that five per cent. who are willing to pay for the fine fruit, and if they are willing to pay for it they are worthy our greatest consideration. Even that five per cent. of the consumers want a certain article, and they go from store to store until they find the article and the quality they want, but when they find it they are not willing to pay for it. Not over ten per cent. of that five per cent. are willing to pay the price for that high quality. As a business proposition, we, as dealers, are up against it. It is the same idea with the newspapers and magazines. A large percentage of the people want the miserable sheets that are circulated in our country. If they didn't demand the publication of such matter, it would not be printed.

The majority of all the fruits we produce in our Connecticut orchards and fields, and, in fact, the country over, is large in size. Now, if we can couple the quality and quantity, other things being equal, everything will go well. We are growing a little bit more of the high quality fruit. We are studying the quality and planning for it. I think it is the duty of this

Society and each member of the Society to grow more fruit of high quality. And then, too, I believe we should put it up in the most attractive manner possible and present it to the public through advertising. I believe in advertising. I believe that if we growers would advertise the high quality of our fruit, both in the local and city papers, perhaps on a coöperative plan, we would soon find the results of such advertising would amply pay us for our efforts. I believe the time will come when the members of this Pomological Society will unite in advertising Connecticut fruit. If we will produce fruit of high quality, and coöperate in our advertising, we will educate the people along this line. I believe we can do it; I believe there is a splendid opportunity for this work in educating the public in fine fruit and its culture, and stimulate the consumption of high grade fruit. I hope another year we can arrange at the close of our evening session to repair to another hall and enjoy a fruit banquet—a real good layout of everything in the fruit line—that we can hold and go home sober.

This bright and practical address was attentively listened to.

A selection was played by the orchestra, following which Mrs. Ella B. Kendrick, of Hartford, was introduced to speak on "Fruits from the Viewpoint of a Consumer," as follows:

"The Views of a Consumer."

MRS. ELLA B. KENDRICK, Hartford

Mr. Chairman, Ladies and Gentlemen:

When your presiding officer consulted me about a consumer to talk to this convention, I suggested some member of the Consumer's League. Failing to bring this about *this* consumer will try to give you a few points about the proper conduct of your fruit business.

She had intended to say something about Adam in connection with the first fruit of which we have

any record, but your presiding officer gave her strict orders to "cut out Adam," so he is "cut out." Really, I am never surprised, but always gratified, when a man shows that he is ashamed of Adam. But the order did not include the apple, the best thing that ever grew, either in the garden of Eden, or in the State of Connecticut. The fruit that suggests everything good and pleasant and sociable, for there is nothing about an apple that's not good—but the cider. What would life be without apple dumplings, hot apple sauce, and New England apple pies! You don't make as good apple pies in Connecticut as we do in Massachusetts, but they are pretty good even here.

Now the consumer wants to eat perfect apples, but what does she do instead? If she is a large family and buys her apples by the barrel, she always goes down cellar with her basket, under orders to bring up the "specked ones." So year after year we dive down in that barrel, wipe off the fair apples that we want and bring up the specked ones that we would rather not have.

Now, why don't you apple-growers throw away your barrels, hand-pick your marketable apples, wrap them separately and pack them in boxes, as the Western grower does? And incidentally get more money. Why, within a week, I have seen the most luscious apples ever, absolutely as good as the best fruit right from the trees, and that's pretty good.

These were Western apples, to be sure, but why couldn't they have been Connecticut apples? Is anything the matter with Connecticut, that she cannot do as well as California, Colorado or Canada? You may say that it will cost too much to do as suggested. But you will get more. There are consumers who will gladly pay one dollar a dozen for such apples as I saw. Try it, somebody; try it, all of you.

Happily, the time is going by when we must turn the apples out of the barrel to see what is in the middle, and from the consumer's standpoint let us hope that the time of the barrel is also going. If the Western grower can make money by this care of the apples, and pay the extra expense of ship-

ping to the East, there ought to be money in it for the home grower.

Last summer, while trolleying up and down our State, we saw lots of orchards that needed attention. There are farmers in Connecticut that do not seem to put as much thought and care into apple raising as some others do into tobacco raising, and it would seem as if apples, and all fruits in fact, ought to be worth as much thought as tobacco. To an outlooker it would seem worth while for the apple man to take good care of his trees and to trim them with a view to easy picking. And why do you allow any "poor" years? Why don't you do something to counteract the "off year?" The consumer wants good fruit every year. Your apple exhibit here shows that there's nothing the matter with the Connecticut apple. Where, then, is the trouble? if the consumer does not get the best of apples, and she does not always. Is it with the Connecticut man?

As your presiding officer did not forbid me saying anything about Noah, I would like to refer to the fact that he carried "*pcars*" into the ark, although he spelled it differently, or we do for him. And we are not sure that it would not have been as well if he had not, for most of the pears the consumer gets now are so fragile that, when we buy some at the store, we must run home and eat them before we can take off our hats, or they are decayed. While the California pears are pretty to look at, they do not begin to equal the New England ones for flavor. If only our own would keep! Why don't they? What's the matter? Is it in the method, or rather lack of method, of packing? I believe in the West, that great place where so many good things seem to begin, the packing of pears is faithfully attended to. The pears are wrapped and packed in thin, board boxes, paper lined. I am told that the fruit thus cared for keeps at least a month longer.

The consumer wants strawberries, raspberries, blackberries, and all the small fruits, without so much dirt and without so many bugs. And the consumer doesn't want the fruit

that comes a long way in refrigerator cars, and that does not keep at all well, and the consumer wants native fruit earlier. Why doesn't the Connecticut fruit grower try for at least three weeks of the early market? You lose six weeks of the berry trade, and the good prices that always accompany the early sales.

This consumer will make a suggestion. Is there any good reason why a piece of ground cannot be prepared with pipes, laid deep enough to thoroughly warm the soil and keep it at normal temperature? Then, if there is a cold, backward season, or an unusually wet one, just turn on the heat and force growth. Now what do you think of that? You are thinking that that woman doesn't know much about fruit growing, or she would not advance such impractical ideas. Well, she doesn't. But there was a time when you all thought shade-grown tobacco was not possible. All new ideas are startling. Suppose someone who likes to experiment, tries this "hot pipe" idea. Some of the Connecticut farmers "lay pipes" for other things. Some have already begun.

The amount of dirt, street dirt, that one gets with her berries is appalling. Of course, with the larger fruits, apples, pears, and peaches, this can be avoided by paring, but we cannot scrub our berries. If the producer brings his fruit protected, and I guess he doesn't always, not all dealers keep fruit inside, out of the way of street dirt, which we have with us always. And, Mr. President, why do the berries mould so quickly, in or out of the ice-box, in or out of the basket?

The letter of instruction received by this consumer said: "Tell us all the consumer is 'up against.'" The story isn't half told yet. We are "up against" a problem when we go to buy melons, the small melons, the muskmelons, cantaloupes and nutmegs. It's not only a problem, it's a conundrum and a puzzle combined. There seems actually no way to know a melon but to eat it. You cannot judge by the looks, and you cannot take the word of the clerk, because he does not know. And so many melons revert to type and taste "squashy!"

About once a season one gets a delicious little melon at a store and then nobody knows how it happened.

The early melons, the imported ones, are atrocious, hard, unripe, and flavorless. Connecticut men ought to grow good melons, oughtn't they? It doesn't seem as if we used to have such poor melons. What's the matter? have they run out? One dealer told me that the East Hartford melons were reliable, but there were not enough of them. Another dealer told me that the East Hartford melons did not "pan out." You can take your choice. "I know not what the truth may be, I tell the tale as 'twas told to me." I know good melons can be raised in this State, for I have eaten the most delicious ones, grown in Wallingford, but they were not bought in open market, but were direct from the melon patch and in the daytime at that. The melon is a product that everyone wants. (Caterers cut out melons from their bill of fare, because they cannot be sure of getting good ones.)

To sum up: What the consumer wants is more fruit, earlier native fruit, and cleaner fruit. And especially does she want to be able to buy from a label. She wants to go to market and see a label on crate or box that stands for something. She wants to be absolutely sure that that label means always and everywhere, fruit that is fresh, is ripe, is packed under the best conditions, and is honest and true all the way through. You know that any grower that establishes that confidence in his products and then lives up to his reputation, has laid a sure foundation for a profitable and lasting business. It's worth trying. You have shining examples of this method of business in Connecticut, why don't all of you do thus and let the consumer have the best there is going? The more attractively fruit is put before the public, the more consumers. Lots of people buy things that look tempting, when they would pass by the ordinary-looking fruit. We have horseless carriages, smokeless powder, seedless oranges; now we want "dirtless berries," "bugless fruit," "coreless apples," "seedless grapes," and "eyeless potatoes." And we want them right away quick.

There is one thing to which I wish to call your attention. I don't know that you can in any way meet the condition. I don't know as there is any way to meet it. But that is, the small sidewalk dealer which we have in all of our cities. Not all these dealers come under condemnation, by any means, but there are dealers who are personally so filthy that their wares are a menace to the consumer, which, in most cases, is a child who cannot discriminate.

There is need for an inspector to look after this condition; some person who can do this thoroughly and persistently, and not politically. Perhaps this problem will not be solved in our cities until we women vote: when we do, we will help you to better conditions everywhere, and then we'll grow such fruit that there will be two bites to a cherry in Connecticut as well as in California. (Great applause.)

Mrs. Kendrick's interesting and witty talk provoked frequent applause, and was one of the features of the program.

Music by the orchestra.

Chairman Hale next called on Editor H. W. Collingwood, of the *Rural New-Yorker*, to tell how to reach the consumer and increase the use of more and better fruits. Mr. Collingwood, who is always popular with Connecticut fruit growers, made one of his splendid addresses, brimful of practical hints to both the grower and consumer, illustrating his points with many capital stories. He was listened to with the greatest pleasure.

“ How to Reach the Consumer and Increase the Use of More and Better Fruit. ”

By H. W. COLLINGWOOD, Editor “The Rural New-Yorker.”

Mr. President, Ladies and Gentlemen:

Whenever I come to Hartford and appear on this platform, I feel as though I ought to live in Connecticut, and if you should go where I live you would find some people who

would like to get rid of me. You folks come in here with your good clothes and boiled shirts on, Brother Miles and all the other people, and they stand and sit around here as though they were "it." You want to understand that you are mere ornaments compared with those who are doing more than you do in the extension of fruit eating. That woman who made the apple sauce that I had for my supper is doing more than you are to let people know what is good in the world. You good people should elect that woman an honorary member of your society—that was the best apple sauce I have eaten in a long time. There are a lot of us who stand before the people, who remind me of a story I heard of a man who had been married four years. He came down to his place of business in the city one day and said that he had received a great compliment that morning. His associates asked him what it was and he replied that his wife said that he was a model husband; and he was very much puffed up until one of his friends got a dictionary and showed him the definition of "model": "A very small imitation of the original thing." I think a good many of us are imitations rather than originals.

I don't believe I should know how to deliver an address—all I can do is to talk. Now, about the idea of getting people to eat more fruit. When I speak of fruit I mean particularly the apple, because the apple is the king of fruit, the fruit that runs all through the year fresh or nearly so, the fruit upon which we most bank our business for the future. The peach crop is all right; it comes in a lump and we take care of it as best we can. I think the pure food law is going to give us a better chance to can fruits; we are going to do a greater business in canning fruits; but the good old apple, the old red apple, not cultivated as my friend Hedrick has tried to tell you, but the high colored, sod-mulched apple—that is the apple and the fruit we are going to bank on for the future. That comes in my line of business more than any other fruit. Shall I tell you the method we use on my farm to reach the consumer direct and increase our sale of the apple? In the first place, in order to get close to the consumer and sell more

of our fruit, in my judgment we have got to do four special things: In the first place, we have got to make our apples fit the papers—if I may put it that way; in the next place, we have got to approach the most susceptible member of the family if we are going to increase our sales of fruit. If you go to the head of the family and tell him his family ought to have more fruit, the chances are he won't buy any. You have got to approach the susceptible members of the family—the wife and the children. In the next place, you must make apple eating fashionable. Make the people think it is the proper thing to eat apples. To do this you must keep everlastingly and eternally at it. If we once start a campaign of apple eating, we must make up our mind we can't stop after a year. We must make it our business; the first thing we think of in the morning and the last thing before we sleep and all through the day. That is the way manufacturers do; that is the way the professional man does and the way all people do who make a success in their trade or profession. Make out a plan and then keep everlastingly at it, with no let-up; keep at it in every honorable and legitimate way. We must do these four things to sell more fruit and the right kind of fruit.

My farm has a curious history. The apple orchard on it, when I bought the place, was a lot of old trees and old stumps of trees, 75 or 80 years old or older. I am told, by those who know, that up to 25 or 30 years ago all the apples that grew on those trees were made into cider. I know there is a legend in our neighborhood that the man who once occupied my farm consumed alone—without any help—fifteen barrels of hard cider in one winter. Practically, all the people did who lived on that farm was to gather the apples in the fall, have them manufactured into cider and drink it in the winter. One old man who lived there said he liked to go down to the brook and catch fish and that a fish was never fit to eat unless it could swim three times: once in water, once in pork fat, and once in hard cider. I don't know but I ought to have a cider barrel on top of the windmill with the name of the farm on it.

I never could have had that farm had it not been for hard cider. The former owner drowned his character and his manhood in barrels of hard cider. Did you ever think what a wonderful thing can happen in six years? I have two little boys at home who say they are going to be fruit growers. These two little fellows are growing up and making a living in fruit growing on the same farm where the former owner lost his grip through hard cider. That comparison may make any man thoughtful—it shows great responsibilities. There have been great changes in fruit growing in the last fifty years and the next fifty years will contain great responsibilities for the fruit grower if he handles his business honorably and profitably. I asked my boys what was the best way for them to increase their sale of apples—they are 12 and 15 years old—they once went into Hackensack with a load of apples in baskets and brought back \$35. You never saw a man with a million-dollar check as proud as they were, and of course I wanted to know how they did it. One of them said, "Whenever we find some boys playing on the street we give every boy an apple; they all run home to their mothers and tease until she comes out and buys a basket of apples." Those boys know how to play upon human nature. The idea was to get a single apple into the hands of each boy, and the boy going home with the taste of it in his mouth, is like putting yeast into flour—it works. The first thing you know, the mother comes out and wishes to buy a basket of apples for the children. Every time the minister comes to our house my boys go out and put a small basket of apples into his wagon—they know the minister is one of the best advertisers we have—wherever he goes he says something about the apples from "Hope Farm" and how fine they are, and eight chances out of ten those people who have heard him speak of our apples come to our farm and buy fruit. Those boys always make it a point to give a few apples to everybody who visits our farm. We don't sell all the good apples and keep the poor ones for our own use, I assure you. I don't believe in that kind of living. You can say what you will about raw

apples—there is nothing in this world that advertises the apple as well as a good baked apple in cream. We have them three times a day and sometimes four. You have no idea how those little things will advertise your fruit. The mothers and the children talk about the fine apples they had at a certain place and as others hear those words it sets them thinking about the apple. This kind of talk is just the thing we need in our business. We must not overlook in this country the little, homely things, for they are the very things which count. A man will talk about combinations and trusts that are crushing the life out of the nation. He can't touch those things, they are all out of his reach; and nine times out of ten that very man is not controlling himself as he ought.

How are you going to succeed? Advertising by little, simple things, working them out in your own mind. I know a fruit grower who never starts away from home unless he carries in his pockets two baked apples. I always carry some apples with me, and when I am on the elevated in the city, or whenever someone does me a little service, instead of treating with a cigar, I say "Won't you have something?" and I hand out an apple. A man so treated is always satisfied and pleased, and if I had my way every person would treat in this manner. I am talking about these simple things because they are more easily understood. I wish Chauncey M. Depew would make one more speech. You know once, when speaking in the Bowery, a person, wishing to show his approval of a certain thing Depew said, cried out, "You're a peach." The name has clung, and whenever a man does anything right, he is styled "a peach." I wish Depew would make one more speech and be told that he was "an apple."

Talking about approaching the susceptible member of the family, my little boys say it won't do any good to talk with the father about buying apples when he is coming home from his work, for he is tired and hungry. They say the child and the mother are the members of the family to approach. If you can sell apples to Mrs. Brown, you may be sure that Johnny Brown will quickly tell Willie Smith and Bobby Jones

about the fine apples he has at his house, and then you are sure of making a sale to Mrs. Smith and Mrs. Jones. Apples get to be a necessity, and I know of several instances where the meat bill was cut down that the family might buy apples. I advertise my apples in the local paper. This year I sold out all my apples and potatoes just through a little advertising in the local paper. I also sold 8,000 cabbages through the same medium. My boys have record cards on which the name and address of each purchaser is kept. These cards are for use another season, in case you wish to look the customers up. In any business a man must make that business fit the papers; get right after the people with the goods; put the matter to the people; you will find you can sell your products in that way.

"A PLACE FOR EACH."

The hen remarked to the muley cow,

As she cackled her daily lay,

(That is the hen cackled), "It's
funny how

I'm good for an egg a day.

I'm a fool to do it, for what do I get?

My food and my lodging. My!

But the poodle gets that—he's the
household pet,

And he never has laid a single
egg yet—

Not even when eggs are high."

The muley cow remarked to the hen,

As she masticated her cud,

(That is the cow did) "Well, what then,

You quit and your name is mud.

I'm good for eight gallons of milk
each day,

And I'm given my stable and grub;

But the parrot gets that much, anyway—

All she can gobble—and what does
she pay?

Not a dribble of milk, the dub!"

The hired man remarked to the pair,
"You get all that's coming to you.
The poodle does tricks and the parrot
kin swear,

Which is better th'n you kin do.
You're necessary, but what's the use

O' bewailin' your daily part?
You're bourgeois—workin's your
only excuse;

You can't do nothin' but just produce—
What them fellers does is art."

We have got to do something more than merely produce our goods; we have got to learn the art of placing these goods on the market right and in the hands of the consumer. Some of us are fitted by nature for doing these things right and some are not. Every time a man puts his goods on the market he makes a confidential connection between the producer and the consumer. It is necessary that we advertise judiciously in order to get our goods before the public at the right time and in the proper manner. If you fail in this, your money and time are thrown away. We have little circulars printed describing our work and soliciting patronage and we hand these out to people. I see no reason why a man should not carry in his pocket a little card with a picture of an apple on it or something that will advertise his business, and of course his name and address. This method of advertising don't take anything away from his reputation or character and he can distribute them wherever he goes. Let your wants be known. If you want to fill this hall next year, you officers of this Association, hire a space in the Hartford papers and advertise that every man, woman or child that comes here will get a big apple pie. You will need half a dozen policemen to clear the street, and if the pies are made as they ought to be, everybody that had a piece of that pie would be a better person and there would be more apple pie eaten in the city of Hartford than ever before. Try some novel advertising like this and you will be amazed at the result.

Now about the package; I use the box package. Be sure your box is the right size and that the price is not too high. If a man is selling apples at \$2.00 a barrel and he makes three boxes out of a barrel, charging possibly \$4.00 a box, the step is too rapid from \$2.00 to \$12.00, and a mistake has been made. I can make excellent money selling my boxes at \$1.00 each—remember, my fruit is mulched, not cultivated.

All over the country, people are referring to the Connecticut Pomological Society as a live Society, and they do well to say so. Now, if you could get a dozen of your men to come in to Hartford and each put up a certain number of apples, guaranteed to be straight and good, store them in the city, purchase a delivery wagon and put a man on it who knows his business and then advertise the apples delivered at the door, and to every customer hand a dozen post-cards addressed to headquarters for further supplies, my experience justifies me in saying that you could not possibly raise fine apples enough to supply the trade right here in Hartford, when people find out just where they can get good fruit. In the first place, don't put your great, big apples in boxes—the great, big cultivated apples—that is not the kind of apple that the domestic trade wants. The domestic trade wants an apple of medium size. You know, my boys say the child is the best customer. Now these children have teased their mothers into buying a box of apples and when they want one they go to her and ask for one. If the box contains these great, big apples, she will look at them and say, "I can't give each child such a great, big apple," and she does the worst thing possible—cuts the apple in four parts. Every time you do that you make the apple a luxury and not a necessity. If the box is filled with medium-size fruit when the children come, each child gets a whole apple, and the first you know the fruit is gone. We should keep our great, big apples out of that box for that certain trade.

Another thing, you want a high-colored apple for that class of trade. I regret to say there are lots of people who

eat with their eyes. What do I mean? I mean that class of people are always looking for a high-colored and attractive thing. Eighty per cent. of my customers will pay 18 to 20 cents more for high-colored fruit, and I tell you we don't clearly understand yet the commercial value of high color in the apple. The idea of intense culture, large *light* colored fruit, will not serve the trade as well as the high-colored apple will. The whole thing can be summed up in this: be sure of your goods. Get them right, so you can guarantee every apple; then don't be ashamed of your business; get into print; get before the people; give away a good many apples and be sure you give them to the right persons—the susceptible member of the family. Begin at home, my friends, and eat as many apples as you can there. Make it a part of your duty to have apples on your table in some form every meal.

I think no man on earth should, if he can help it, embark in a business into which he cannot put every ounce of pride and every ounce of honor that lie between the soles of his feet and the top of his head. For my part—speaking for myself—it is one of the greatest things to be thankful for in my life, that fifty years of age finds me in two honorable kinds of business.

1st. Fruit growing. It seems to me as if the man in the fruit growing business has an opportunity for the highest development of character.

2nd. Speaking for myself again—and perhaps more than I ought—I believe a man who puts his thoughts in enduring ink may rank beside the pulpit in influence, or he may go down lower than the runseller if he fails to do his duty. It has been one of the unhappy thoughts of my life that there are so many young men in this world who are willing to take an education from the state, who are willing to hold up their heads and their hats and accept forming of the mind and training, and then go and sell it all into the services of the rich and the strong, when God gave them those opportunities that they might serve the poor and the helpless and those without offense. When a man can say, "I will serve this

master and I will turn my back upon that"—and every man here, I care not how humble he may be, how small his position, will have that put up to him straight and clear—I hope you will all take the right side.

Another selection by the orchestra, and then baskets of fine apples were distributed among the audience for eating and testing. Such old-time favorite kinds as the Baldwin, Greening, Spy, Belleflower, King, Russett, Seek-no-further and the newer McIntosh, Sutton, Jonathan and others were tested and their good and bad qualities informally discussed.

This novel feature was apparently a great success, and was much enjoyed by all. In fact, so successful was it that, as suggested in the remarks of Chairman Hale, the attempt will be made next year to carry out a complete "fruit banquet" at the Society's annual meeting.

After more music by the orchestra some of the delegates present from other States were called upon for remarks.

Professor U. P. Hedrick, of Geneva, N. Y., extended to the members of the Society greetings from the New York State Societies, and in a pleasant but brief manner reviewed their work.

WILLIAM H. REID, delegate from the New Jersey State Horticultural Society: Last year and year before we sent delegates from our New Jersey Society to your convention and they returned with such glowing reports that I have had a curiosity to come, and this year was able to do so. I wish to say that the glowing reports I have heard concerning your earnestness have not exceeded the conditions I find. I am most favorably impressed with all that I see and I like you because you believe in your state, your different towns, your farms, your orchards and your people. With all these interests you are bound to succeed. I was glad to hear Brother Collingwood speak as he has regarding the apple. It is the most glorious fruit in the world. I want to say that we have a society of fruit growers in New Jersey, and it is flourishing.

and I came here to get ideas to help us in our work. We hope you will send delegates to our meetings and assure you they will be warmly received. I thank you.

Mr. A. Warren Patch, of Boston, was introduced and spoke in behalf of the commission men. He said he had recently come from Florida, and that he was "chilled" to get such a reception in Connecticut. He continued: "The apple market has gone off about half of what the growers expected. Brother Collingwood spoke about the use of cider. It may be well for me to advise Mr. Hale's friends that Georgia has gone dry this year, and if they visit him they will need to take their "medicine" with them. (MR. HALE: "Most of them do.") There is no question but the apple is king of all fruits. I have always said both here and elsewhere that the Connecticut Pomological Society was the most wide-awake of any I had ever attended, and I still believe so. I bring you the greetings of the apple and fruit men of Boston; we have been laboring in Boston trying to dispose of apples since August. The price started high and has gradually gone down. Some make the remark that people are not eating apples this year, but this is wrong, as the consumption of that fruit is constantly increasing, and there are not as many in cold storage as there were last year at this time. The men who handle the goods have lost money. They started in paying too much, the mistake being that they feared a short crop. I assure you of my wishes for your continued good luck and prosperity.

Several other delegates were present, but the lateness of the hour prevented calling upon them.

At 10 o'clock the evening session was brought to a close, all agreeing that it had been the most delightful ever held by the Pomological Society.

Second Day,

Thursday, February 6.

MORNING SESSION.

President Putnam called the opening session of the second day of the meeting to order at 9.30 a. m.

The attendance was practically as large as on the previous day, and the interest and enthusiasm continued unabated.

The first business was the report of the auditors, presented by Mr. G. W. Staples for the auditing committee. (Report will be found on page 21.)

Following this report a motion was made and carried that the annual reports of the Secretary and Treasurer be accepted and ordered printed in the proceedings.

A brief verbal report for the Committee on New Fruits was presented by the chairman, G. A. Drew of Greenwich.

The standing committee on Markets and Transportation also reported as follows:

Report of the Committee on Markets and Transportation.

J. NORRIS BARNES, Chairman: The Committee has really very little to report this year. Possibly with the exception of the strawberry crop, everything was taken care of in our local markets last season. Except for the fact that our Railroad Company is making a move that seems very favorable to future needs, I would feel that there was not a word to say. I understand, after a talk with the Superintendent of the road, that the Company is buying a large number of refrigerator cars of the very latest pattern, and he informs me that anyone wishing this service for perishable products may have these cars without extra expense—the slipper to supply the ice. This is an important item of news to the fruit growers of Connecticut, and perhaps the strawberry growers may be able to make use of these cars.

An important matter was spoken of in yesterday's meeting—that it is desirable that this Association make some arrangement whereby there may be made a collection of statistics of the fruit products in the State, to be distributed generally. This appeals to me as a desirable thing and I hope we may take hold of it.

SECRETARY MILES: I have thought of this matter for some time and believe we ought to take hold of it and prepare such a fruit crop report in a more complete manner.

I offer a motion, that the Executive committee with the committee on markets and transportation be directed to devise a plan for annual crop reporting and collection of fruit crop statistics and put the same in operation for the benefit of the members of our Society, and also that if in the judgment of these committees it is deemed wise, to make a census of the fruit industry in Connecticut.

Motion seconded and upon vote was passed.

Some time was then occupied in the discussion of questions on the program list, as follows:

DISCUSSION OF QUESTION LIST.

Question No. 27: "Will spraying with the miscible oils prevent peach leaf curl?"

MR. HOPKINS: We have never sprayed our peach trees much, we have put on lime and sulphur only.

PROF. HEDRICK: I can answer from experience that the miscible oils *will not*, in general, but I think it is claimed that Scalecide has some fungicidal properties that touch it.

Question No. 15: "Can anyone estimate the money loss to Connecticut caused by repeal of the peach yellows law?"

MR. FENN: I was one of the deputies under that law. It may have been of some benefit. It was a matter of education and it did educate a lot of people. In regard to the yellows and little peach, I question whether the law would have been of much benefit at the present time had it remained in force.

PROF. GULLEY: The benefit derived from that law was

really to capture the odd trees around the country; now, unfortunately, we have something that is looking after the odd trees—the San Jose scale. The growers who have large orchards will look out for their trees; it is the scattering trees and the small growers that cause the trouble. I am not sure whether I would care for the law now or not.

Question No. 24: Has anyone ever whitewashed peach trees in a commercial way to retard the trees starting in the spring?

PROF. HEDRICK: Whitewashing to retard the buds in spring is not practised in Michigan or New York, so far as I know. I believe Professor Whitton carried on an experiment which proved that whitewashing would retard the trees somewhat, and this practice has quite a following in the commercial orchards of Missouri, but so far as I know in the East and North, the trees are not whitewashed. The application of Bordeaux mixture, and lime and sulphur put on the peach orchards in the Northern States have a retarding effect upon the peach buds. Whether that effect amounts to much is more than I can say.

Question No. 28: What is the outlook for the complete control of the San Jose scale?

DR. W. E. BRITTON: I hardly know how to answer this question. I think you will remember when Professor Smith was here he told you he didn't look for any immediate result in the scale working itself out, as many people think it will in time. He said he should look for it to be about as destructive for the next twenty years as at the present time. The scale has probably been in this State about twenty years. The history of these pests is that they are somewhat worse at first and finally become less destructive. There are several reasons for this. The first is that their natural enemies hold them in check, and another is that the plants upon which they work seem to take on a sort of immunity after they have been attacked year after year. Our trouble comes from the odd trees all over the country, which are completely infested by the scale. If these trees could be killed outright, never to grow again, the question would settle itself.

Question No. 29: Can anyone give definite information of injury to trees by the use of "Scalecide"?

DR. W. E. BRITTON: The only case of injury to a large apple tree was where the material was applied without first shaking or properly mixing the contents of the original package. That might happen in the use of any miscible oils. The injury consisted of killing the buds, the application was made in the winter. Certain portions of the tree did not put out the leaves until the leaves on other branches were nearly full grown. On investigation I found the mixture had been taken out of the barrel before mixing properly. On all packages are recommendations that the contents be well mixed and shaken before using. If this is done I don't believe you will get any injury.

Question No. 26: Is fumigation of nursery stock effective in killing the scale insect?

MR. HOPKINS: I am not positive about it. We believe when it is properly done it will kill them all right. The Canadian Government depends on that entirely; they require that all trees shipped into Canada shall be fumigated.

PROF. HEDRICK: At the instigation of nursery men in Geneva, Professor Parrot began experiments in this work, also with dipping nursery stock; he has been trying not only Scalecide, but half a dozen other mixtures. I know in a general way, while he has had injuries result from dipping the roots or tops in either the lime and sulphur solution or miscible oils, he thinks fumigation is safer and better, but I cannot give you the percentage of the injuries. If you will send a card to the Geneva Station you will receive the result of these experiments. They will be published later on. I am not an entomologist and am speaking from information given me in this matter.

MR. B. G. PRATT: Will the Professor allow me to make this statement? I think he is mistaken when he states that Professor Parrot said it was injurious to fruit trees to dip them, root and top, in Scalecide or miscible oils. What he did say was that while it did not clean the trees of the scale, as the fumigating of stock did, that there was absolutely no

injury to the tree by dipping the roots; but with the lime and sulphur in every instance where the roots and top were dipped the roots were killed.

PROF. HEDRICK: I stand corrected; I haven't the experiments well in mind. You had better read the bulletin.

J. H. HALE: I have had a good deal of experience in planting trees, both apple and peach, since the San Jose scale has come, and since we have had the compulsory fumigation by nursery men, and I have got to this point personally, I don't want to plant any more fumigated trees. I am sure the nurserymen in the country, either by failure to follow the exact formula as recommended, or for some other reason, spoiled more trees for growing than they helped. I have dipped trees in lime and sulphur—thousands of them—not dipping the roots, however, and we have dipped and sprayed with soluble oil, and we have not lost any of the trees, and *have* killed the scale. If the nurserymen will furnish me the kind of trees I want, I don't care if they are covered with scale, I will take care of them by dipping. I, for one, hope the fumigation laws will be entirely wiped off the statutes.

Question No. 46: Has anyone tried the home-made miscible oil mixtures, and with what result?

MR. E. M. IVES: I watched Professor Jarvis work at my place in mixing the preparation, and I have confidence that I can mix it myself. Professor Jarvis has made examination, and reports the trees under his supervision which were sprayed at the time he was there, to have absolutely no live scales on them. If the mixture is applied thoroughly, it will do the work, so far as I know.

MR. A. T. HENRY: I have had some experience with the scale on pear trees two or three years old, and on which the scale must have been alive at the time they were planted, although they were fumigated. Last fall I received two five-gallon cans of this oil from Professor Jarvis, and we sprayed it on the trees. About two weeks ago I sent him some sample twigs, and he reported that he could not find a live scale. We sprayed this mixture on a warm day; the day following I wanted to spray some larger trees and during the night the

weather had turned cold. When we came to start our work the next morning we found the pumps gave us some trouble; there seemed to be a heavy scum or something, much like axle grease, in the pumps, that had settled on the iron work. I would like to know what caused this.

PROF. JARVIS: This peculiar trouble of clogging up I noticed at the Ives farm. I attributed the cause to the fact that he had been using the tanks for spraying Bordeaux mixture; I don't know but perhaps Mr. Henry had been doing the same. Bordeaux mixture acts very slowly in an oil preparation, but if it is left long enough you will notice a stickiness. It would be well to clean the tanks if this causes trouble. Personally I have never had any such difficulty.

MR. IVES: Some of the spraying was done in freezing weather. I don't know whether that had anything to do with the trouble or not.

Question No. 14: Theorists are recommending the planting of dwarf apples. What say the practical men?

PROF. HEDRICK: The New York Experiment Station has four orchards of three acres each; we have about 150 varieties of dwarf apples. The trees are from one to eight years old. Up to the present time we have not found the claim of those advocating the merits of the trees true in our experimental orchards. They do not come into bearing early; the fruit is no handsomer, and they are not easily cared for; they require much more training and considerable work is necessary about the roots to keep down suckers, and in general they require more care. I regret to see the horticultural papers and some agricultural papers and some speakers recommend the planting of dwarf trees, without a better knowledge in relation to them. About forty years ago they were planted extensively in the western part of New York State, and I have visited these orchards and learn that they are not now, and never have been, commercially successful. I would like to know if in Connecticut you have succeeded better than we have in our experimental orchards in New York.

PRESIDENT PUTNAM: I know a man who placed an order for 10,000 of these trees. His friends got him to cut down

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his order to a quarter of that number. We have 3,000 of them planted in Litchfield County.

MR. J. H. HALE: I have never seen anything that convinced me that the claims that are being made in regard to the dwarf trees are being realized. This matter is being talked of on the platforms more and more, and I am glad to hear our friend Hedrick speak on the subject. I think he has spoken the Gospel truth. My friends, don't go into the dwarf apple business. It is a snare and a delusion.

MR. G. W. STAPLES: When my orchards were planted in Maine, some fifty years ago, there were many dwarfs among them; some of these are alive, the majority of them are dead; they do not succeed and are not as practical as the standard trees.

PROF. GULLEY: I am planting dwarf trees and have been for ten years, and am going to continue it, regardless of Brother Hale or Professor Hedrick's statements. I will tell you more of my success later. I have wonderful faith in the trees yet.

MR. ROGERS: Eighteen years ago I set out the first apple tree on my place. At that time I went to a nurseryman and asked him to advise what to plant. He gave me a list of ten varieties. I figured it out and finally planted the Baldwin; some people told me I made a big mistake. The next year I wanted to plant some more and I set the Baldwin. I have been setting apple trees ever since and have continued with the Baldwin. If I were going to set, this year, a thousand trees I would plant the Baldwin. Standards, not dwarfs!

MR. GEORGE W. SMITH: I have been a fruit grower for twenty years and have imported dwarf trees from several celebrated nurseries in England, also have purchased them from American nurseries, and have probably 150 varieties of dwarf apples; have also dwarf pear and dwarf cherry trees. I have carefully followed instructions in growing these trees and have put all the intelligence I could into the work. I have had stock from a nursery in Rochester, N. Y., that makes a specialty of dwarf trees. These trees gave me a good deal of pleasure in the early days of my experience, but as I grew in

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knowledge I learned to regard them with little favor. I have come to the conclusion, after an experience of twenty years with them, that they are a good thing for the greenhouse or for rich men, who have gardeners to care for them, but when you come to utility and putting them up against standard trees for making a profitable living, they are an abomination, in my judgment. So as to take up little room I set them six feet apart, according to rule. They are such a tangled mass to-day I would be ashamed to ask anyone to look at them; they grow so fast I can do nothing with them. There is no profit in them and no satisfaction for a man who has to earn his living through them. Another thing they say that the San Jose scale will not touch them. That is a preposterous idea. The scale will attack the dwarf as quickly as the standard varieties.

MR. HALE: I would like to make a motion that the directors of our State Agricultural College send Professor Gully to school to Brother Smith before he is allowed to plant any more dwarf trees. (Applause.)

MR. J. NORRIS BARNES: It happens that we have about a thousand dwarf trees planted out. We have not proceeded far enough yet to tell you what they will do; they are certainly good growers, and they look to me as though they would do some business for us; I am not scared yet.

Question 25: Is Chairs' Choice peach a shy bearer, and on what soil does it succeed best?

MR. J. NORRIS BARNES: In regard to the fruiting qualities of Chairs' Choice peach, would say that on some soils and in some localities it is productive of large yields of fruit of most excellent quality. To be at its best, this variety seems to need a soil that is quite strong—a *good* loam soil.

While I have in mind localities where it has been, or is, one of the most profitable varieties grown, we have not found it productive enough to be profitable, although planted on land thought to be superior in quality to any other in the orchard. The lot of trees under consideration were planted in 1896-7 and removed in 1907, a ten-year period.

The tree is a strong, vigorous grower, tender in wood and

fruit bud. The fruit is of very large size and handsome color, also not so acid as Crawford Late.

I would put Wheatland, Crawford Late and Chairs' Choice varieties in the same class, ripening in order as named, and we have found the Crawford Late the best money maker of the three varieties. Taking Elberta peach as the standard of productiveness and selling value, I find that during the bearing period just mentioned, the returns have been approximately as follows:

From Wheatland: 1,100 trees, less than 1,000 baskets fruit (considered unproductive and trees removed three years ago).

From Chairs' Choice: 1,100 trees, not more than 4,000 baskets fruit; selling price, no more than Elberta. (Trees mostly removed one year ago.)

From Crawford Late: 1,100 trees, not more than 8,000 baskets; selling price about same as Chairs' Choice.

From 2,200 Elberta trees (same age and period), yield close to 40,000 baskets fruit.

The past season, what few trees we had of first named varieties, gave us no fruit, while Elberta gave us 2,000 or more baskets, selling for close to five thousand dollars.

Season 1906, this same Elberta plot gave us more than 8,000 baskets, for as many dollars; very light yield of other varieties being compared.

Season 1905, this same Elberta plot gave about the same yield in quantity, while previous seasons gave two extremely heavy yields of fruit of superb quality, although of lower selling value, owing to heavy yields everywhere.

During these years the other varieties yielded their best returns, but at no time outselling Elberta. One crop of fair volume and two or three very moderate ones is the record for Chairs' Choice, in the same orchard as the Elberta plot just described.

Perhaps it is only fair to add that the Elberta plot of ground, while not the equal in quality—that is, strength of soil—of the Chairs' Choice plot, seemed admirable for the

variety to do its best, there being no entirely unproductive year since trees reached bearing size.

If we could have foreseen at planting time the difference in productiveness and selling value of these varieties, and planted accordingly, it should have made a difference of several hundred per cent. in the cash returns from the orchard, taken as a whole. It appears extremely important, therefore, in making large plantings of fruit trees, to select those varieties KNOWN to be *most suitable* for soil, and most in demand in market one must use to sell in.

PROF. HEDRICK: I would name it (Chairs' Choice) as the second most important commercial peach in New York, Elberta ranking first.

MR. S. G. COOK: I have grown them in Connecticut; the trees grow large, but do not bear much fruit. I never got but one heavy crop of Chairs' Choice in Southern Connecticut and that was two years ago.

PRESIDENT PUTNAM: We will now take up the first topic on the morning's program, which is one of great interest to every orchardist. As you know, the question of "Tillage vs. Mulching for the Apple Orchard" has been much discussed of late, and I think we are particularly fortunate in having so able an authority as Professor Hedrick to lead the discussion of the subject this morning.

Tillage vs. Sod-Mulch for the Apple Orchard.

By PROF. U. P. HEDRICK, N. Y. State Experiment Station,
Geneva.

My subject implies a controversy. The disputed question is, Will an apple orchard thrive and fruit better under tillage or in sod with the grass used as a mulch? The Geneva Experiment Station is conducting two experiments to settle this question. This paper is largely a report on one of these trials of the two methods of orchard management, the other not having been carried far enough to warrant a

report. In a controversy of any kind terms must be defined, and to properly understand an experiment the conditions under which it is undertaken must be considered, and I hasten to these tasks.

Is it necessary to define tillage? The definition is short and clear. To till is to plow, cultivate, or to hoe the soil. Tillage is an humble word, with its flavor of soil and its suggestiveness of sweating toil, but it is an old word and should be an honored one. It has rendered mankind untold and untellable service; it is practiced wherever there is agriculture in the world, and nearly all of the plants which minister to the needs of human kind have been improved by tillage. To plow, cultivate, or hoe, to turn and stir the soil, and so improve the crop, or so improve the soil, these simple operations were the beginnings of agriculture and the beginnings of civilization, and they have been the chief tasks of all civilized peoples. Tillage is so universal, and is so essential a part of agriculture, that those who oppose it for any domesticated plant should look well to its origin, to its history and to its present place in agriculture before banging it and battering it and charging it with evil.

There are two words to define in the compound term, sod-mulch. Sod is soil made compact and held together by the matted roots of living grass. A mulch is an organic material placed about trees to prevent evaporation and to furnish humus. The sod-mulch advocates divide into several sects in their manner of making use of sod and mulch. One sect keeps sheep on the sod, another pigs, and still another cattle. Another says, cut the grass for a mulch, while still another says the grass is not sufficient and must be supplemented with straw, or manure. Most recent of all is a new sect, those who would use stone for a mulch, who want an everlasting mulch; the founder of this sect is now preaching "stone-walls about apple-trees." Some of the sectarians in these several denominations of sod-mulchers, say that the apple trees, to receive full benefit from their method of culture, must be planted in sod and ever after left there, and that if a man is once indiscreet enough to till his orchard,

he is ever after cut off from the blessed privilege of sod-mulching it. Still further, in planting the above orchard, some extremists say, do not cut the sod by digging a hole for the tree, but cut the tree, lop off roots and branches and stick the stub in a hole in the sod made by a crow-bar. This, however, is sod-mulch culture plus that silly dementia of modern horticulture known as the Stringfellow method.

Sod-mulch culture is applicable only to the apple. The peach, the plum, the cherry; the orange, the olive, the lemon; the grape, the gooseberry, the currant; corn, potato, and the pumpkin; the sunflower, the geranium and the forget-me-not; all these and all of their kind need tillage. The apple alone wants a soil compacted and held together with the matted roots of living grass.

Sod-mulch culture is a new method of orchard-management. We have grown apples for a long, long time—centuries—and a good many of the orchards were in sod, but the virtues of the sod and the mulch therefrom were not discovered until the beginning of the twentieth century. So, too, this method is not a universal one—unknown and unpracticed outside of a few of the Eastern States. Oregon, California, and Colorado, though they produce apples that surpass the world in many respects, and though they have all kinds of soil, and though their various soils are both irrigated and farmed as dry lands, yet the sod-mulch culture has not found a place in any of their commercial orcharding districts.

We can understand the experiment to be discussed, better, if we take a brief glance at the philosophy of tillage and that of sod-mulch. The objects of tillage are so well set forth by one of the leading living authorities on the subject, Professor F. H. King, that I give them without a change of a single word.

“(1) To secure a thorough surface uniformity of the field, so that an equally vigorous growth may take place over the entire area.

“(2) To develop and maintain a large effective depth of soil, so that there shall be ample living room, an extensive

feeding surface and large storage capacity for moisture and available plant-food materials.

“(3) To increase the humus of the soil through a deep and extensive incorporation of organic matter, so that there may be a strong growth of soil micro-organisms and the maintenance of a high content of water-soluble plant-food materials.

“(4) To improve the tilth and maintain the best structural condition in the soil, so that the roots of the crop and the soil organisms may spread readily and widely to place themselves in the closest contact with the largest amount of food materials.

“(5) To control the amount, to regulate the movement, and to determine the availability of soil-moisture, so that there shall never be an excess or deficiency of this indispensable carrier of food materials to and through the plant.

“(6) To determine the amount, movement and availability of the water-soluble, plant-food materials present in the soil, so that growth may be both rapid, normal and continuous to the end of the season.

“(7) To convert the entire root zone of the soil into a commodious, sanitary living and feeding place, perfectly adapted to the needs of the roots of the crop and to the soil organisms—adequately drained, perfectly ventilated and sufficiently warm.

“(8) To reduce the waste of plant-food materials through the destruction of weeds and the prevention of their growth, through prevention of surface washing, and drifting by winds.”

It is impossible by any other means than tillage to obtain for the apple the conditions enumerated above: soil uniformity; soil depth or a commodious living room; an increase of humus; improved physical condition of the soil; conservation and regulation of moisture; greater availability of plant-food; a sanitary living place, clean drained, ventilated and sufficiently warm; and the destruction of weeds. Are not these objects worth striving for with any cultivated plant?

I am fortunate, too, in being able to give the philosophy

of the sod-mulch and in the words of Mr. Grant Hitchings, who, as all know, has been one of the chief advocates of it. Mr. Hitchings says:

"This system gives one practically the whole Spring and Summer to grow and market other crops, while the orchard is growing of its own accord a supply of vegetable matter for humus that all authorities agree is so necessary for proper soil maintenance. This means that you can do a good business, without extra help, growing strawberries, green peas, early potatoes, etc., and have the money for the fruit in the Fall to swell your bank account instead of paying it out for fertilizers and cultivation. Other advantages are that you can drive through your orchard to spray, better on sod than on cultivated soil, as the latter sometimes gets muddy, and also washes badly on rolling ground. You can allow your apples to mature fully on the trees, for, if they should fall on the grassy mulch, nine-tenths of them would be marketable. By making repeated gatherings the yield will be largely increased and quality improved. With the mulch method you accumulate humus in your soil; with clean cultivation, you burn it out or exhaust it."

Reduced to its simplest terms this statement claims that the sod-mulch method is a cheap and easy way of getting apples. In fact, the chief claim made by most of the sod-mulch advocates is for the cheapness of the method. If the reasoning of the sod-mulchers be put in the form of a syllogism, the major premise is: "Cheap methods give most profits in apple growing;" the minor premise: "The sod-mulch method is a cheap one." Conclusion: "Therefore, the sod-mulch method is the most profitable one." Never was there a greater fallacy than that expressed in the major premise, that "Cheap methods give most profits," and it is one upon which thousands of agriculturists found their practice in growing other crops, usually to their loss and often to their ruin. It is not cheap methods that give most profits; it is low cost of production that gives profits. But do they show that it lowers the cost of production of a bushel of apples? There is only a change of a letter between *cheap* and *cheat*.

In one of the above sentences my stenographer made a mistake and wrote of sod-mulch, "a cheat way of growing apples." On the showing of the above syllogism I am willing to let the mistake stand. The man who practices cheap methods too often cheats himself.

We are now ready for direct evidence as to the relative values of tillage and sod-mulch for the apple. How do the systems of management pan out in a commercial orchard? The orchard in which the Geneva Station has for four seasons tried the two methods is located on the farm of Mr. W. D. Auchter at South Greece, New York. The orchard consists of ten acres of Baldwin trees thirty years old, five acres tilled, five acres in sod. The soil is a medium heavy clay loam, rich, and containing enough gravel to make it porous. It was selected as typical of the average orchard soil of Western New York. The experiment being carried on is a broader one than a simple trial of tillage and sod-mulch. The experimenters hope to add something to what is now known about the food and drink of trees—how trees take them in, make use of them, and with what effects; what influence soil temperature and soil ventilation have on the development and function of tree roots; and, among still other problems, what the relationships between grass and the apple may be.

It should be said, too, that the experiment is to run ten years at least, and that the results now given do not cover half the minimum period and are, therefore, in some respects inconclusive and superficial. For instance, the discussion now centers around the yield of fruit. While of course the crop is the ultimate criterion of orchard treatment, yet the effect upon the tree as indicated by the leaf, wood and root development, is quite as important an index of the value of tree treatment as the crop of fruit.

The care of the two plats in the Auchter orchard has been as follows: The tilled plat is plowed in the spring and cultivated from four to six times, ending the cultivation about August first, at which time a cover crop of barley, oats or clover is sown. On the sod-mulch plat, the grass is cut once or twice during the season and allowed to lie where cut and

decay into a mulch. The grass crop has usually been large; last year it was enormous, thick and tall, standing to the top of the fore wheels of a buggy, and no one could say that it was ever insufficient for a good mulch. In all other details of care the treatment has been the same in the two plats.

Mr. Hitchings publicly contends that the orchard should have been for some time in sod to have made the test a fair one. In reply, it can be said that the orchard was in sod, though the trees were not mulched, for most of the first twenty-five years of its life previous to its being taken for this experiment. The roots of the trees ought to have gotten used to sod during that time. This experiment has been going four years now, and the trees, as we shall show, are not yet "broke in" to taking their food and drink in the same trough with grass. As the "breaking in" is telling badly on these trees, we may well ask, How long will it take to make a sod-mulch orchard out of a tilled one?

It should be of interest to know what happened in the Auchter orchard during the quarter century it was not tilled. Sometimes figures talk. At the end of the twenty-five years in sod the Auchter orchard was sold to the present owner as common farm land. Its former owner had contemplated cutting it down as worthless. *After several years of tillage the orchard is paying Mr. Auchter, for an average of a number of years, ten per cent. on a valuation of one thousand dollars per acre.*

A member of the staff of the Ohio Station, who says that his institution is the "original official champion" of sod-mulch culture for the apple, claims that proper methods of mulching have not been used in the Auchter orchard, that the cut grass is not sufficient and that straw or litter of some kind ought to have been added to the grass mulch; this is the "original official" mulch, as near as I can make out, of which the Ohio Station is "champion." In answer to this criticism, I have only to say that there are not many who follow the Ohio method in New York. Sod-mulchers in this State mostly follow Mr. Hitchings' way of simply cutting the grass for a mulch, and therefore this Station is testing his method.

Another fruit grower says, in a printed statement, that "it would have been a fairer test if the grass had been cut earlier—twice during the season and raked and piled under the spread of the trees, instead of all over the ground." In reply, we can say that in two of the four years the experiment has been running, the grass was cut twice and without at all lessening the deleterious effect of the sod-mulch treatment on the trees. I am sure that this man is wrong in advising that the grass be "raked and piled under the trees." The roots of the trees in the Auchter orchard intermingle at all points, as they do in most old orchards, and a mulch should therefore cover the whole ground.

The ultimate criterion of the relative merits of the management to which an orchard is subjected is the crops of fruit obtained. It is important, however, that trees should grow well, and for the measure of vigor there are several characters of the trees available; as the leaf area on the tree, the length of new wood formed, the number of new shoots and the color of leaf and wood. The properties of the fruit, as size, color, time of maturity, keeping qualities and flavor, must be noted. We come now to a discussion of these criteria.

The effects of the two methods of management on yield of fruit are shown by the following figures:—

	BBLs. SOD.	BBLs. TILLAGE.
1904	615.1	591.9
1905	233	278.9
1906	210.3	531.1
1907	275	424.3

Average yield per acre on the plats for the four years: Sod, 66.6 barrels; tillage, 91.3 barrels; difference in favor of tillage, per acre, 24.7 barrels. These results scarcely need comment. For an average of four years the tilled plat shows an increase of a little over one-fourth above the sod-mulch plat. The figures first read show that each succeeding year the difference becomes greater, indicating a continuous loss of vigor in the sod-mulch trees.

One of the chief advantages of the sod-mulch method, as put forth by its promulgators, is, that it is a much less expensive method of caring for an orchard. The average expense per acre of the two methods of management for four years was \$15.78 for the sod, \$22.18 for tillage; a difference of \$6.40 in favor of the sod. It is true that the outgo has been greater for the tilled plat, but the income has been greater. The cost of production has been materially less for the tilled trees, and that is the main point in the whole discussion. A cheap and easy way of growing apples is not necessarily the most remunerative way.

Leaving the yield of fruit for a brief consideration of the effects of the two treatments on tree characters, we can mention first, the leaf area. Measurements of leaf area were not made, but the merest glance through the orchard would show that there were more and larger leaves on the tilled plat than on the sod-mulch plat. The experienced orchardist knows that sparsity of foliage and smallness of leaf can indicate but one thing, ill-health.

So, too, there was something amiss with the color of the leaves. It did not need a trained eye to detect the difference in color of foliage in the two plats. The dark and rich green of the tilled trees could be noted a half mile from the orchard, indicating an abundance of food and moisture and the heyday of health, while from the same distance it could be seen that the foliage of the sod-mulch trees was pale and sickly. Of all the signs of superiority of the tilled trees, the color of the foliage spoke most eloquently, and more than one man of the hundreds who visited the orchard was heard to say, as his eyes lighted on the contrasting colors of the sick and of the well trees, "that satisfies me." The absence in color in the leaves of the sod-mulch trees was due to a lack of chlorophyll, or leaf-green. Chlorophyll is essential to the assimilation of plant-food, and when it is lacking the trees become starved and stunted. The leaves on the sod-mulch trees assumed their autumnal tints a week or ten days earlier than those on the tilled trees and the foliage dropped that much earlier, thus

seriously cutting short the growing season of the grassed trees and thereby impairing their future vitality.

The new wood produced by the grassed trees tells a similar tale of injury. It was not half that produced on the tilled trees; the twigs were not plump and well filled out; there were fewer new shoots; and the wood of the mulched trees lacked the clear, bright, rich brownish tint of health, so that in mid-winter one could pick out mulched trees and tilled trees by the color of the wood.

The most remarkable differences to be noted in the qualities of the fruit were in size and color. The size of the fruit averaged considerably larger on the tilled plats. The greater yield in the tilled plat of the orchard must be attributed to the increased size of the fruit rather than to an increase in number of fruits. This statement is based upon the facts that the trees in the two plats bore equal quantities of blossoms and about equal numbers of fruit, but the size of the tilled fruit was much greater.

As to color, there is no question but that the fruit from the sod-mulch plat is much more highly colored than that from the tilled plat. This difference varies with the season. Mulched fruit ripens from a week to two weeks earlier than tilled fruit. If the variety and the season is such that the tilled fruit can remain on the trees some days after the mulched fruit must be picked, the difference in color is much less. The lighter color of the tilled fruit is readily and clearly explained. The coloring matter in the skin of the apple, like that in the leaves, consists of chlorophyll, or leaf-green. The coloring of ripening fruit is due to the changing of the chlorophyll of the skin into a red-colored substance, just as in the leaf it changes into the colored substances of autumnal tints. Therefore, since the sod fruit ripens earlier, it colors earlier and in most seasons better.

The abnormally high color of the sod fruit in this orchard is one of the most marked signs of the deleterious effect of the sod on the trees. Every man of experience has observed that when a tree is starved, stunted, girdled or injured, its foliage and its fruit take on high color. Radiant color in

fruit or leaf is often the hectic flush of a diseased patient. The bright color of the fruit of the sod-mulched trees may be purchased at the expense of the vigor and the health of the tree.

The later ripening period of the fruit on the tilled plat would be a defect with some varieties and in some localities, but in general in New York late ripening is an advantage.

Fruit from both plats for the four years has been kept in cold storage to test the relative keeping qualities. This work has been in charge of Mr. G. H. Powell, the cold storage expert of the United States Department of Agriculture, who writes me in brief: "There appears to have been little practical difference in keeping quality between fruit from sod land and fruit picked a few days later from the tilled land."

There is no difference in quality. If one shuts his eyes to the color and eats a Baldwin from a mulched and from a tilled tree from the two plats, he can detect no difference if the fruit be of the same degree of ripeness.

In considering the causes of the differences noted between the two systems of management, we can do little more than state the hypotheses which seem to account for the results. The experiment is by no means concluded and definite reasons cannot be advanced until all the proof is in. Yet it seems to me I am warranted in offering the following hypotheses:

1st. Plant-food is more available in the tilled plat than in the sod plat. That there is an abundance of the plant-food necessary for the welfare of the trees and the production of crops, in both plats, is certain. For the trees in the tilled plat showed, in all respects, good feeding; and such trees in the sod-mulch plat as could get any considerable portion of their roots in soil where there were no grass roots, likewise seemed to be well fed. Moreover, two of the chief elements of plant food, potash and phosphoric acid, were added to a part of the trees in each plat for three successive seasons and without appreciable results in either case. It is evident that there is plenty of food in the sod land, but for some reason

it is not available to the apple trees. The trees are starving in a land of plenty.

2nd. The sod-mulch does not conserve moisture. The chief study in the Auchter orchard for the summer of 1907 was that of the water content of the soil in the two plats. One hundred samples of soil were taken at different times during the summer and under conditions safe-guarded in every way possible, to determine accurately the amount of moisture in the soil. The analyses showed, approximately, that the water content in the tilled soil during the past summer was twice as great as in the sod plat, thereby substantiating what has long been claimed, that tillage is a better means of conserving moisture than mulching.

The difference in the moisture conditions of the two soils is enough to account for the differences in crops and trees in the two plats. Trees must have water. If an apple tree bears ten barrels of fruit, there are about $8\frac{1}{2}$ barrels of water in the tree's output. In a full-grown apple tree, it is estimated that the total leaf area is about 1,000,000 square inches. Mr. F. C. Stewart of our Station has counted the stomata, or pores, on a square inch of the apple leaf, and finds that a fair average is about 150,000 per square inch; or, for the leaf area of the whole tree, 150,000,000,000 pores. Now to supply the demands of its ten barrels of apple children while these 150,000,000,000 pores are constantly giving moisture, is enough to drive a tree to drink, and the apple tree becomes a hard drinker. When, in the heat and drought of summer, the apple tree is compelled to share its scant supply of water with the thirsty horde of hangers-on found in an orchard sod, the trees must suffer. Still further, a diminished water supply entails a cutting off of the food supply. Plant-food enters the tree as a solution, and an apple tree suffering from lack of water, as a necessary consequence, suffers from a lack of food. A thirsty plant is a hungry plant.

3d. The sod-mulch soil is less well aerated. In the experiments we are carrying on, I have not attempted to secure evidence on this point. It is obvious that sod interferes with the air supply in the ground beneath it, and it is

not hard to believe that such interference would hinder the proper development and prevent the proper work of roots. The muffler of mulch, which forms a part of this system of orchard management, would of course intensify the deleterious effects of the sod in the above respect.

4th. The soil temperature is lower in the sod-mulch plat than in the tilled plat. It is possible that the harmful action of grass on trees may be accounted for in part by the influence of the sod on the temperature of the soil. During the summer of 1907, the soil temperatures were taken in the tilled and mulched plats twice a day for forty-one days, at the depths of six and twelve inches, and under as nearly as comparable conditions as circumstances would permit. At both depths the difference was in favor of the tilled plat. At six inches the difference was slight, being only one-third of a degree, but for the greater depth, twelve inches, the average in favor of the tilled plat was $1\frac{3}{4}$ degrees. It is not an assumption to say that the higher temperature is most favorable to the growth of the apple tree, for plant physiologists, soil physicists and bacteriologists agree that an increase in soil temperature is favorable to plant growth. As one of them puts it, "The soil is a great factory that has its production vastly increased as the temperature rises."

5th. There are probably differences in the biological or "germ life" activities taking place in the soil. This is a matter upon which I am not qualified to speak with certainty. But I know that the men who are studying soils find that there are various kinds of micro-organisms inhabiting the soil which have much to do with the proper functioning of the roots that grow therein. The soil is teeming with countless millions of living organisms which bring about necessary changes of one kind and another in that soil; without them higher vegetation would not grow. Now the activities of these beneficent organisms are dependent on soil conditions, and King tells us, in the quotation given above, that tillage induces a strong growth of soil micro-organisms; that "it improves the tilth so that soil organisms may spread readily

and widely; and that it converts the root zone into a commodious and sanitary living-place for the soil organisms".

6th. The grass may have a toxic or poisonous effect on apple trees. At the Fiftieth Annual Meeting of the Western New York Society, the speaker gave an account of a series of pot experiments, which seemed to show that grass roots in some way poisoned peach trees growing. The United States Department of Agriculture has published a number of observations and experiments to show that different plants growing in the same soil may poison each other.

I am able to give also the results of a most excellent series of experiments planned and carried out on the Woburn Experimental Farm in England. These experiments were planned to show the effects of growing trees in grass, the latter to be used as a mulch. The following gives the gist of the results of the experiments in question:

"As to the general effect produced by grass on young apple trees, the results of the last few years have brought forward nothing which can in any way modify our previous conclusions as to the deleterious nature of this effect, and we can only repeat that no ordinary form of ill treatment—including even the combination of bad planting, growth of weeds and total neglect—is so harmful to the trees as growing grass round them. * * * * The evidence which we shall bring forward will, we believe, be sufficient to dispose of the views that the grass effect is due to an interference with either the food supply, the water supply or the air supply of the tree, and that it must in all probability be attributed to the action of some product, direct or indirect, of grass growth which exercises an actively poisonous effect on the roots of the tree." I do not put forth the statement that grass poisons the apple as one having been proved, but I say that it may be so.

In conclusion, the reader is warned that particular cases do not warrant general conclusions. The Auchter experiment is in many respects a particular case, and the apple grower must bear in mind that under other conditions, his own perhaps, the trees might have behaved differently. The

Auchter orchard was selected as being typical of Western New York conditions, and the results obtained may therefore be regarded as especially applicable to this region. But there are peculiarities of soil and location which might change them even in Western New York. It is a simple matter for an orchardist to plow up a part of a sodded orchard and cultivate it for a few years; or as easy for one who has a tilled orchard to lay a part of it down to grass, cutting the grass as a mulch, and in a few years he can see what happens. We want more experimenters among fruit-growers and these are good experiments to try when a man becomes dissatisfied with the crops of apples he is getting.

The opportunity of giving another warning cannot be lost. The sod-mulch method is heralded as the cheap-and-easy method. But some men cannot stand cheap-and-easy methods. If they begin by applying it to tillage, they are likely to look for a cheap-and-easy way of planting, the Stringfellow way for instance, a cheap-and-easy way of pruning and a cheap-and-easy way of spraying. Some cheap-and-easy growers will disembarass themselves with the necessity of taking care of their trees at all, and in the end will wind up as ornery, no-account apple growers. I do not mean to say that all will, but some of them will. You remember, no doubt, in *Pilgrim's Progress* how Bunyan's characters had their natural associates. Thus the young lady whose name was Dull chose as her companions, Simple, Sloth, Linger-after-lust, Slow-pace, No-heart and Sleepy-head. Cheap-and-easy has his natural associates and they are a bad lot. Take care how you cultivate their acquaintance. Better keep them under a sod-mulch.

There is an argument for tillage to be made from the standpoint of sentiment. The sentiment of the orchard is worth something, both because there is more than the money-making side to apple growing, and because a man who puts some sentiment in his vocation succeeds best. "Where no pleasure is, no profit is taken," and "The labor we delight in physics pain." My argument is, that when a man plants an apple orchard, he should materialize his mind and his soul

into trees and fruit. He can't do too much for his trees or do it too well. Bryant makes us feel this when he says:

"Come, let us plant the apple-tree.
Cleave the tough greensward with the spade;
Wide let its hollow bed be made;
There gently lay the roots, and there
Sift the dark mould with kindly care,
And press it o'er them tenderly.
As round the sleeping infant's feet
We softly fold the cradle sheet;
So plant we the apple-tree."

Bryant was not a disciple of Stringfellow. You lose all of the poetry and all of the sentiment of the orchard when you plant a tree in a hole made with a crow-bar and suffer it to remain in sod, that you may, to quote Mr. Hitchings, "do a good business in growing strawberries, green peas and early potatoes." The "Divinity which orders Nature" never meant that an orchard should be so planted and so cared for.

In chemistry, physics, astronomy and all of the exact sciences, the workers constitute a jury of keen, trained men, before which new doctrines can be tried. The jury is always sitting and false doctrine is quickly weeded out. Agriculture has no such jury. Its workers are scattered; many are apathetic; they differ in training and in degree of intelligence; and they speak many languages. There can, therefore, be no suitable jury to try new doctrine, and there are no recognized authorities to approve or disapprove of them. It comes about, therefore, that false and erroneous doctrines often grow unheeded and choke out the true and the useful. Agriculture needs now and ever to be defended against false doctrine. I am venturing to play the part of a defender this morning, and if I have gone far in defense of tillage and in condemnation of sod-mulch, it is because there is need.

Following this very able paper the subject was discussed at length.

DISCUSSION.

A MEMBER: There is a theory that apples keep better raised on sod than on tilled ground.

PROF. HEDRICK: So far as cold storage is concerned there is no difference; in common storage we have kept the different kinds of fruit and found but little difference; the mulched fruit ripened a week or two earlier than the tilled fruit and must be picked earlier; the tilled fruits are the juiciest; the sod mulch fruits are more firm.

A MEMBER: Don't they decay fast if grown on tilled soil?

PROF. HEDRICK: I haven't observed it so.

A MEMBER: What is your idea about the "Stringfellow method" of planting?

PROF. HEDRICK: The "Stringfellow method" may work all right in Georgia, but not in New York or Connecticut; the farther south you go the more easy it is to make the trees grow. I doubt, though, whether the Georgia peach growers follow the "Stringfellow method" to the letter.

PROF. C. S. PHELPS: I am much interested in some of the reports Professor Hedrick made of experiments at Geneva. It seems to me the Professor is a little unfair in that, all the way through, his leanings crop out toward cultivation. And I hope he will excuse me for calling his attention to it. I wish to call his attention to a few instances in Connecticut where fruit is being grown under sod conditions with a great degree of success. We have on the hills in Litchfield County an old farm where apples have been grown successfully under sod conditions for many years, and where in the last ten or fifteen years probably as much money has been made on apples as on any farm in the State of Connecticut, and yet they have been grown almost exclusively under sod conditions. The conditions there are peculiar. The soil is a heavy, tenacious soil, with a somewhat clayey subsoil, filled with moisture and from early spring until about the first of June one could not successfully cultivate it if he wanted to. The orchards are kept in grass and a crop of hay is harvested every year, and in place of that is put on stable manure as a mulch—the owner feels that the grass is more valuable to him for feeding purposes than to use it as a mulch, and that the manure is more suitable for the purpose. He is very successful in his orchard management and is reaping valuable returns. I doubt very much if

under conditions like those mentioned, or similar conditions, cultivation would be economical.

PROF. HEDRICK: I was made somewhat prejudiced in favor of cultivation; everything has made me so. Where you can't cultivate because of so much moisture in the soil, why, of course, the sod mulch is the only thing.

At this point the stage was arranged for the next number on the program, viz., the demonstration lecture by Prof. L. B. Judson of Ithaca, N. Y., on methods of grading and packing fancy apples.

This proved to be one of the most interesting and instructive features of the meeting, holding the close attention of the audience.

Prof. Judson, before the eyes of the audience, actually graded and packed in boxes, several lots of choice market fruit, making use of the popular type of boxes and packing table used by the extensive orchardists of the West. The speaker's expert handling of the fruit and admirable explanation of methods were received with great pleasure and profit by all.

(It is to be regretted that we cannot give here in full Prof. Judson's most excellent address, but of necessity the talk was a somewhat disconnected one, interrupted, as it was, by frequent questions from the audience and the speaker stopping to explain the various details in handling the fruit to the best advantage.

The following resumé, however, gives the main points brought out in this very practical object lesson, and the accompanying illustrations will help to make clear how the packing is done.)

PLATE IV.



EXPERT PACKERS AT WORK.



PACKING TABLE USED BY OREGON APPLE PACKERS.

Successful Western Methods of Grading and Packing Fancy Apples.

By PROF. LOWELL B. JUDSON, Assistant Professor of Horticulture, Cornell University, Ithaca, N. Y.

Packing Apples in Boxes.

The box is undoubtedly the coming package for fancy apples. Its general adoption in the far West may have been due at first to chance, seeing that material for barrels was not to be obtained there without great expense; but the many advantages of the box package are now so apparent that no one on the Pacific Coast would think of using barrels for fruit, even though they might be had quite as readily as boxes. The bushel box is convenient in size for the average family, and makes it possible for the grower to place his fruit in the hands of the consumer in the original package, thus deriving the benefit of advertising. It is practically impossible for a grower to build up a reputation among consumers if he uses only the barrel package, for that is too large for all but a few of the consuming public. If the barrel is used, it is opened by the retail grocer, and the consumer seldom knows from what grower the fruit comes. The box package also gives the consumer a much better opportunity to examine the fruit before purchasing, in case he does buy in original packages, since by removing the cover or side, one-fourth, or at least one-fifth, of the apples are at once exposed to view. The smaller package also admits of much better aeration than the barrel, and permits the contents to be cooled more rapidly when placed in storage. Finally, the box is a much neater and more attractive package than the barrel, and permits a peep at the contents even before it is opened.

Various sizes of boxes are in use for packing apples, but most of the growers on the Pacific Coast have now settled upon two sizes, the so-called "standard," measuring inside $10\frac{1}{2} \times 11\frac{1}{2} \times 18$ inches, and the "special," which is a trifle longer and narrower, measuring inside $10 \times 11 \times 20$ inches. The standard box thus contains a little less than 2,200 cubic

inches, or somewhat more than a struck bushel. The bulge in the top and bottom, after the box is nailed, adds about 150 cubic inches to its capacity. With skillful grading to the proper size, and by varying the style of packing, apples of any size or shape may be packed in this standard box.

Notice the dimensions of the stuff of which the box is made. The ends are $\frac{7}{8}$ inch thick, the sides $\frac{3}{8}$, and the bottom and top $\frac{1}{4}$. If the ends are any thinner, they are likely to split when nailed into; if the sides are any thinner, they will bulge when the box is nailed up and thus leave no flat surface on which to lay the box without bruising the fruit; and if the tops and bottoms are any thicker, they will not spring readily to permit the proper bulge. The best material for boxes is spruce, but white and yellow pine and fir are frequently used. The box material should always be bright and fresh, and boxes used in the orchard during the picking should not be used for packing. Boxes in the flat cost anywhere from $8\frac{1}{2}$ to 12 cents apiece, depending upon locality, material, and quantity bought.

There are three styles of packs in common use, known as the "straight," "diagonal," and "offset." The straight or square pack is made up of rows running straight across the box, and presents a very neat appearance, though it is the severest on the fruit, as each apple is squarely opposed to its neighbors. The diagonal pack, in which the rows run diagonally across the box, permits each apple to fit into the space between each pair of apples with which it comes in contact. It is easier to put up and have each tier come out right, than the straight pack, and does not take quite so many apples to the box. It is superior to the offset pack, because it fills up the sides of the box solidly except at the corners, so that if the box is opened at the side instead of on top, a solid face of fruit is presented; with the offset pack there would be as many holes as apples exposed.

The straight pack may be put up in the three-tier, four-tier, and five-tier styles, so-called from the number of apples required to extend across the box. The number of tiers may also be three, four or five in a straight pack. The three-tier

pack takes either 45 or 54 apples to the box; the four-tier takes 96, 112, 128 or 144; and the five-tier 200 or 250.

One of the good features about all styles of packing in boxes is that the exact number of apples in each box is known, and when stenciled on the outside, as it should be, gives the consumer a valuable bit of information. The diagonal pack is used for sizes intermediate between those adapted to the straight pack, and should be used whenever possible in order to avoid bruising of the fruit.

Only two kinds of diagonal pack are in common use, the $3\frac{1}{2}$ tier and the $4\frac{1}{2}$ tier, again named from the number of apples required to reach across the box. In the $3\frac{1}{2}$ tier style, 64, 72 or 80 apples are required to the box; in the $4\frac{1}{2}$ tier, 150 or 175 are necessary.

Before packing apples in any style, they must be rather closely graded as to size, since it is difficult to put up a good pack if all the apples in a box are not very nearly of the same size. Packers of some experience are able to select very rapidly from a table apples of the proper size; but unless they are expert, the apples should be carefully graded before being placed upon the packing table. In any case, not more than two sizes of apples should be upon the table at one time. Otherwise there is too much pawing over of the fruit. At best, bruises will wear upon the fruit in time, and all the fruit should be packed off the table at least once in every two hours.

The table you see here is one of the most convenient that can be made. As you see, it is very simple, being nothing but a 3 x 4 foot frame of 6-inch boards supported by 2 x 4's for legs. There is no top to the table except the canvas, which you see is large enough to cover the table with a double thickness. The lower thickness is tacked securely to the frame so as to allow a sag of about six inches, and the upper thickness is then doubled back over it. The latter can thus be easily raised, and any litter which accumulates can be shaken off. The ends of the table, you notice, are allowed to project about fifteen inches so as to provide a support for the box while it is being packed, and a board nailed, or better

bolted, to the under side of the frame also contributes to the same purpose.

Now we are ready to pack the box. The first step is to line the box with paper, using two papers rather than one, so that the fruit can be examined without tearing the paper, in case the inspector should open the bottom instead of the top of the box. Each sheet is folded in the manner you see so as to form a pleat at the point where the paper meets the bottom corner of the box. This prevents it from tearing when the bulge takes place in the bottom. After fitting the lining papers into place, a layer paper, which is simply a piece of thin pulp cardboard, is placed in the bottom to hold the lining paper down and keep it smooth.

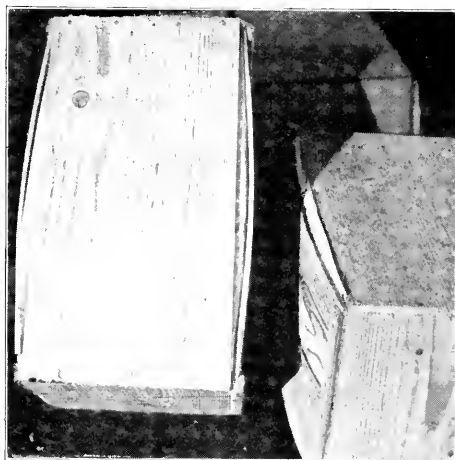
The "paper-hod" is next hung upon the side of the box. It is simply a little tray about a foot square for holding the wrapping papers, which ought to be from 9 x 9 to 10 x 10 inches. The papers are picked up more easily if a rubber finger-cot is worn on one of the fingers or thumb of the left hand. Taking up one of the papers in the left hand, and at the same time selecting an apple of the proper size with the right, the two are brought quickly together and the paper twisted about the fruit so as to leave the surplus part of it twisted up over the stem cavity. This serves as a little cushion, and leaves the apple very neatly wrapped. The first layer in the box should be placed with the eye down, so as to present a neat, smooth appearance in case the box is opened at the bottom; or if it is desired to have the flat base of the apple presented to the bottom boards, as it is better for the fruit, the first tier may be wrapped so that the twist of paper comes over the eye instead of the stem. All the other tiers are wrapped in the manner I spoke of at first, and laid in with the eye down. Between each layer is placed a piece of cardboard called a layer paper. This forms an admirable cushion for every apple and tends to prevent slackness and wetness in the package.

The packer should have it in mind as each layer is packed to put slightly larger apples near the center than at the ends of the tier, so that by the time the box is filled there will be



MANNER OF STARTING THREE AND ONE-HALF-TIER PACK.

[The two boxes at the right show the same pack opened on side and on top.]



BOXES SHOWING THE PROPER BULGE.



FOUR-TIER, THREE-TIER AND OFFSET PACKS, UNWRAPPED.

[The offset leaves too many large holes around the edges.]

a distinct "crown" on the fruit. When the last tier is in, the apples should come just flush with the ends, or very slightly above them, and at the center should be from an inch to an inch and a half above the edge of the box. This means that when the covers are nailed on, there will be a bulge in both top and bottom of one-half to three-fourths of an inch. The spring of the covers will then hold each apple tightly in place, and automatically take up any slack which may be due to shrinkage. Besides this it adds to the attractiveness of the package, since it impresses the buyer with the thought that he is getting generous measure.

Small cleats are used over the cover at each end in nailing it on, in order to prevent splitting and to prevent the thin boards from pulling over the heads of the nails. A nailing press is commonly used to put on the covers, which trues them up and holds them securely in place while they are being nailed.

The customary price for packing all but the smaller sizes of apples is five cents a box, and a good packer will put up thirty-five to fifty boxes or even more in a ten-hour day.

This splendid address occupied the time until the noon recess, which was taken at 12.30.

AFTERNOON SESSION.

The Society reassembled for the closing session of its Annual Meeting at 1.30 p. m., President Putnam in the chair.

By request, a number of questions from the Question List were called up for discussion, as follows:

Question 53: Will it prove a commercial success to spray thirty and forty-year-old apple trees for the San José scale?

MR. DENNIS FENN: I think it will. The best way to do is to go into the tops of the trees and cut out the limbs, but I would not advise cutting the whole top in any one season. I began that two years ago; I did not have sufficient help to do it last year, but I hope to do some more this year. The reason I would cut the tops out is because the Scale troubles more there, where you can't spray them thoroughly. My old orchard is in a vigorous condition and I do think it will pay to keep that orchard sprayed. I know I got quite a little money out of it last year, and, as long as I can do that, I propose to keep at work on my old orchard.

Question 45: Can the maturing and coloring of apples in cultivated and heavily manured orchards be hastened by the addition of fertilizers?

MR. J. H. HALE: I don't know, but my judgment would be that keeping off the highly nitrogenous fertilizers and applying potash will help to increase the color; the use of nitrogenous manure will increase the foliage.

Question 9: If a cover crop should always be used for fall and winter protection in cultivated orchards, what is best?

MR. FENN: What is the matter with mulching, instead of sowing a cover crop?

MR. HALE: I say use clover.

SECRETARY MILES: What about vetch?

MR. HALE: The seed costs too much.

PRESIDENT PUTNAM: Vetch don't make a heavy enough cover. I have used barley and crimson clover, where the temperature runs very low; it comes through and makes a

good stand; the barley makes a good growth in the late fall and makes use of the surplus fertilizers, mats down and protects the crimson clover, which comes up in the spring in a good growth on land that I would not expect it to grow on. It has been the most satisfactory thing I have used in Litchfield.

A MEMBER: How much seed to the acre?

PRESIDENT PUTNAM: I could not tell you how much crimson clover I used, but I sowed about a peck of barley, just enough to make a light stand to protect the clover. It was sowed the first part of August.

Question 49: Can we cut back the tops of old apple trees that are 25 or 30 feet high, with safety?

A MEMBER: I cut back an old orchard two years ago; new sprouts have come out and are growing well.

PRESIDENT PUTNAM: Some nine years ago in Litchfield we had a very severe ice storm that badly injured the apple orchards; no pains were taken to prune the trees; the people went in with an axe and cleaned the orchard out. I went into the orchard a year ago this winter and cut off some of the old stumps and we now have some quite thrifty trees; they were 60 or 70 years old, still they are making a good, vigorous growth and will renew their tops. Whether or not it is a practical thing to do, I don't know; apple trees will stand a tremendous amount of top heading, apparently.

A MEMBER: What did you do about the large cuts—how did you protect them?

PRESIDENT PUTNAM: I used lead paint, also on my young apple trees, without any serious effect. If you can paint the trunks of young apple trees without any serious injury, there is certainly no danger to older ones. I don't know of anything better to use than lead and oil point.

Question 31: What months in the year do borers work?

DR. BRITTON: They work every month in the year except in the very coldest weather, but particularly late in April, especially if warm weather comes then, and from that time up, until they are full grown in June or July, they do a great deal of feeding. With the apple borer, it requires three years

for its complete transformation, so from the time the egg is laid in May up through the first, second and third years, they are working nearly all the time.

PROF. PHELPS: Is there anything new in regard to washes that will act as a preventive for the borer, especially the apple borer? I have been looking upon arsenate of lead as being the most probable preventive wash we could find. Whenever we have put it on the trees, we have had it remain there for a long time. There were no borers found in that vicinity, so it did not prove anything. If you put it on too thin, it will peel off like whitewash; but if you put it on thick, it will remain a long time, a year or more. I think it will be difficult for the borers to get through it.

Reports of Special Committees.

The committee appointed earlier in the session to judge the exhibits of fruit, reported at this point, as follows:

MR. N. S. PLATT: Mr. President, your Committee would report that there were but few exhibits of collections and those were hardly of a very high grade. The packages of fruits exhibited for premiums were very good indeed, and we were glad to award the highest premiums to those packages ready for market. The single plates of fruit were all of good quality, not affected by scale and very little fungus. (The complete report will be found on page 178.)

Mr. E. E. Brown reported for the Committee on the Implement Exhibit, which comprised a very large and interesting display in the lower hall. (The complete list of exhibits and exhibitors is given on page 180.)

Election of Officers.

PRESIDENT PUTNAM: According to the program the time has arrived for the election of officers. Is the committee on nominations ready to report?

MR. C. S. PHELPS: Mr. President, your committee is ready to report, and in behalf of the committee, I desire to submit the following list of names as nominations for the various officers of this Society:

For President—J. H. Putnam, of Litchfield.

For Vice-President—Elijah Rogers, of Southington.

For Secretary—H. C. C. Miles, of Milford.

For Treasurer—Orrin Gilbert, of Middletown.

For County Vice-Presidents—*Hartford*, Stancliffe Hale of South Glastonbury; *Fairfield*, John C. Jackson, of Norwalk; *Middlesex*, Charles E. Lyman of Middlefield; *Windham*, Everett E. Brown of Pomfret; *New Haven*, Norman S. Platt of New Haven; *Litchfield*, Charles L. Gold of West Cornwall; *New London*, Charles A. Gray of Norwich; *Tolland*, Clarence H. Savage of Mansfield.

On motion of Mr. Fenn it was voted to accept the report of the committee and that the Secretary be instructed to cast one ballot for the list of officers as presented.

The Secretary cast the ballot, and the following list of officers was declared elected for the ensuing year.

President—J. H. Putnam, Litchfield.

Vice-President—E. Rogers, Southington.

Secretary—H. C. C. Miles, Milford.

Treasurer—Orrin Gilbert, Middletown.

County Vice-Presidents—*Hartford*, Stancliff Hale of South Glastonbury; *New Haven*, N. S. Platt of New Haven; *Fairfield*, J. C. Jackson of Norwalk; *Litchfield*, C. L. Gold of West Cornwall; *Middlesex*, Charles E. Lyman of Middlefield; *New London*, Charles A. Gray of Norwich; *Windham*, E. E. Brown of Pomfret Center; *Tolland*, C. H. Savage of Storrs.

President Putnam then addressed the convention, expressing his thanks for the reelection, but declining to serve as President another year, explaining that other duties and his business arrangements would prevent him giving the work the attention it should have.

Mr. Phelps urged that President Putnam be asked to reconsider his declination.

Mr. Fenn nominated L. C. Root, of Farmington, for President.

Mr. Root promptly declined and withdrew his name, suggesting that the Nominating Committee be requested to bring forward further nominations.

It was then voted to excuse Mr. Putnam.

MR. G. A. HOPSON: I move that we hear nominations from the floor and then proceed to ballot for president.

Motion was put to a vote and lost.

The committee on nominations then brought forward the name of J. H. Hale for President (applause).

Voted to accept this report.

Mr. Hale spoke at length, declining the honor, and urging that a younger man, fresh in the work, be selected to head the Society.

Mr. Hale was excused.

Mr. Peasley, of Waterbury, moved that the nominating committee be discharged from further service.

Upon vote this motion was declared lost.

The matter of the Presidency being again referred to the committee, Mr. Phelps, for the committee, placed in nomination Charles L. Gold, of West Cornwall.

It was voted to instruct the Secretary to cast the ballot of the meeting for Mr. Gold.

This was done, and Mr. Charles L. Gold was declared duly elected President for the coming year.

(Mr. Gold was not present, having left for home, but later, in a letter to the Secretary, he accepted the office.)

On motion, it was voted that the executive committee be empowered to fill the vacancy in the list of County Vice-Presidents caused by the promotion of Mr. Gold, who had previously been chosen Vice-President for Litchfield County.

Secretary Miles announced the receipt of a message from Professor F. C. Sears, of Massachusetts, explaining his inability to be present and take part in the afternoon's program.

A number of questions were asked of Professor Judson in relation to his address on apple packing, given at the morning session.

PRESIDENT PUTNAM: We will now take up the principal address of the afternoon, which is a talk on "Market Gardening," and I am happy to introduce to you one of the most successful vegetable growers of the Boston district, Mr. H. M. Howard.

Essentials for Success in the Growing and Marketing of Berries and Market-Garden Crops.

By MR. H. M. HOWARD, West Newton, Mass.

Ladies and Gentlemen:

My talk will be divided into three topics:—

- 1st. "Determination to succeed."
- 2d. "Know how."
- 3d. "Do it."

The first and prime factor is a determination to succeed. This lies in the man, and the more prominent it is in his make-up the greater the success he will acquire.

The know how he will learn by observation and experience.

In the doing it he will call into play all the executive ability he has; and the ability of the man to attend to details, to so order and execute moves in the right direction, will be shown in what kind of goods he produces and how he puts them on the market.

It is far easier to succeed in a neighborhood where others are successful, for then it is only necessary to make good copy. Most of us market gardeners think it a good plan to look over our neighbor's fence at least once a week and see what he is doing.

In making a good copy, it is essential that we do as well as the original, before we do better. Take one type of farmer

and follow him closely enough to succeed, and then, when you have found yourself and know where you stand, it will be time enough to do better than he does.

It will pay anyone who intends to start in any business, to serve with one in the same business, until, by observation and experience, he can see clearly how and what to do in order to succeed.

The better education you have and the better head and ability you have, the shorter the time necessary to serve, and the greater your chances of success.

One reason for so many failures in business is the lack of "know how." Another reason is, that the man who fails, thinks he knows and knows not.

But I should miss the object of my coming here if I continued along the line of generalities. I must tell you of ways and means we have of growing market-garden crops about Boston, which may be of interest to you.

It is my purpose to show you how we go to work to get the largest returns from our land.

We start with what land we have and select those portions of it which are adapted for growing each crop. Then we apply all the manure and chemicals needed. We use good seed in large quantity and plant it in a thoroughly prepared seed-bed.

As the crop grows, we try to give the best cultivation and care we know, and leave nothing undone which will tend to increase the amount, or improve the quality of the crop.

We keep the best help we can get, pay them well and work them well, always endeavoring to keep them interested and even enthusiastic over the work; trying always to develop good workmen.

On some farms a large amount of glass is used, on others scarcely any, but instead, large storage pits and cellars for celery, cauliflower and cabbages; also squash houses for squashes.

The market-gardener feels he must keep his men busy the year around and so he has to have glass or storage or both to make work.

Sometimes we make no more profit on stored goods than we should have made if sold as soon as harvested. But the business is more evenly distributed, and the chances for profit are better when we have a good storage capacity than if we have to sell and so have to crowd too much on the market at once.

Some of our best farmers use large quantities of water for irrigation, while others, equally as successful, use practically none. The latter are working a different soil or growing different crops and are not forcing quite so large a gross return from the land.

In harvesting and selling, the individuality of the farmer shows most clearly. The finished product from some growers demands a better price than from others, though there is small difference in quality. A first-class article will often bring two to five times as much as a second grade.

Note these prices or any of these quoted by the papers: Celery, 25c. to \$1.50 per dozen; potatoes, 65c. to 85c.; spinach, 10c. to 25c.; cabbage, 3c. to 5c.

Some of our farmers go so far as to carry only one grade of stuff, leaving all the inferior at home, or sell to peddlers. The farmer's place is on the farm and that is where you will find him. If he is doing much business, he employs a salesman.

A good salesman can easily increase the farmer's profits. No one can expect to make large profits unless his goods are well sold. There are a few farmers who sell their own stuff, but there are so many ways employed by a good salesman, which a farmer or grower might not be able to use, that it is customary and probably best to have a salesman to dispose of the stuff right through the season. If the farmer produces enough stuff to keep the salesman in the market every day, he can dispose of his goods to the best advantage. It is a common saying among salesmen that anyone can give away stuff, but it takes a salesman to sell it. There are several things to consider in selling, but the best salesman will get a good idea of the supply of, and demand for, his quality of goods and make his prices accordingly.

The prices in Boston markets are liable to great changes from day to day, and sometimes from hour to hour of the same day, so a first-class salesman will make his collections promptly and thus avoid much friction with customers.

The sales are always for cash. That is one very good feature of the business. Some of our stuff is very perishable in summer; it must be fresh every day and be sold as soon as it arrives in the market. On some farms, one load chases another to market, so that in the busy season the salesman is kept in the market all the time from 3.30 A. M. till 5 P. M., and he and his helpers handle some days as many as 2,000 bushels of produce. It requires a man of good executive ability to dispose of so much to advantage. There is hardly a farmer who does not hear from his salesman by telephone during the market day, and by keeping in touch with each other they can work to the best advantage. It enables the farmer to govern his supply according to the demand for goods.

There is in Boston a market district reserved for farmers' wagons: South Market street, Commercial and State streets, and part of Atlantic avenue. All the available space is sometimes filled in with wagons in double rows, and during the market hours presents a picturesque sight.

There are a few farmers who do not unhitch, but drive through the market, selling out usually before passing all the wholesalers. No market-gardener expects to make a profit on half crops or poor vegetables, nor is he satisfied with any but good crops of fancy vegetables.

The manure pile is a good index of the amount of business done. Little manure means little stuff and poor; lots of manure means lots of stuff of first quality.

Most of the farmers about Boston run large manure wagons every day collecting fresh stable manure in loads of from one to two cords. This manure is put into piles as compactly as possible, covering not much ground surface and built as high as the drivers will throw it. A pile is started with a given bottom and a layer of fresh manure is added to cover the whole top of the pile each day, till the pile con-

tains what is wanted in it, and is usually 8 or 9 feet high, 12 feet wide, and as long as desired. The sides are built up straight and tramped. There is little loss from leeching or burning in a pile of manure thus made, and the manure will be in good condition to use in about one month's time. These piles are made at places near where they are to be used and may contain from 25 to 100 cords. Into these piles, as they grow, are put large quantities of refuse from the wash-shed, which help to moisten and ferment the pile. It is a custom on some farms to plow in all the manure on hand in November. In point of fact, we are plowing in manure from April to December, and the more we can get into the ground the better we are satisfied. For lettuce and celery, very fresh manure seems to be best; for bunch beets, radishes and spinach, well rotted manure seems best; but for most crops, manure about one-half rotted is most satisfactory.

The manure is plowed in five to seven inches deep.

Overhauled manure is commonly practiced where the piles accumulate over winter, or at any time when it is not in a fine condition to use, or when it needs more fermentation to render its elements available. On most farms the piles are topped over with fresh manure in March and then overhauled, working the sides in and the center out. The fresh manure serves to increase the fermentation. The sides of the pile are kept vertical and line of base straight, so to lose no time when coming to haul out to field.

In applying 30 to 40 cords of hot manure to an acre of land in April, we add a large amount of available plant-food, so that when the first warm days come, the seedlings find plenty of the food they want and use it.

On most early farms we begin to plow and sow by last of March and to harvest by May 10th.

In putting on manure we use dump-carts holding about 30 feet and arranged with a riser, so as to give the body of cart a cant back just before we begin to pull out the manure; we make three, four or five piles of a load and the piles four or five paces apart each way.

The men take considerable pride in getting the rows straight and the piles even in size.

Sometimes, when rushing to get all possible done, a good man will stay in the field to remove tail-boards and pull out the manure while the driver raises the cart and stops the horse at proper intervals, dumping the cart for the last pile. A foreman in the field will enable the farmer to get a lot more work done. In spreading we give each man a row and hold him accountable for the whole row. The manure must be evenly spread and no large lumps left. Every foot of ground must be evenly manured so that the crop will be even, not rank and poor in spots.

PLOWING.

Market-gardeners like to plow their land in spring three or four times, following each plowing with the harrow and drag; the repeated plowings thoroughly mix the soil and manure. At the last plowing the rakers come to follow the plow and prepare the seed-bed, of which I will speak later.

The plow is the emblem of agriculture; it is in almost daily use, for no sooner is one crop harvested than another must be set or planted. The market-gardener tries to keep his land busy all the growing season.

On shallow or sandy soils, if the plowing is only five or six inches deep, and the manure well mixed, with that soil good results are possible. Plowing from seven to ten inches is made on deeper soils.

A good plowman is found on most every market-garden. He is indispensable, he is needed as much as the plow. He is an expert at his art and very seldom breaks a plow in any part, but wears it out. He can plow a straight furrow of even width and depth flat on the bottom. He sets in at the start and at the finish guides his plow and team so as not to carry any soil from the field or round off the corners. In finishing a plot he plows two or three furrows into it, so that every foot of land may be properly fitted for a crop. Driveways or headlands are left ten or twelve feet wide, and consider-

able pains is taken to get the crop growing right up to the driveway.

The plowing well done mixes the manure very thoroughly with the top six inches of soil and makes every available foot productive ground. The market gardener wants no waste land. He cannot afford to let good land well enriched lie idle and a good plowman will capture every foot of good land for his employer. Besides ordinary plowing a good plowman can cover peas and beans with a plow. He can cover in tomato plants, ridge up peas, beans, potatoes, squashes and tomatoes; he can largely bank celery and later plow it out; he can plow out carrots and parsnips to perfection. In fact, he finds use for the plow for most any crop grown on the market garden.

SEEDING.

At the last plowing six men come with rakes ready to make the seed bed for any seed which is to be sown in the machine. All stones or rubbish are raked into the furrow. As each new furrow is turned up it is raked off and the surface of the plot left fine and smooth for the machine. We prepare the seed bed in that way for all small seeds.

The man with the seed sower must keep close to the raker and finish as nearly the same time as he can. The prime object is to get the seed in while the surface is fresh, so that good moist soil will surround the seed. Seeding when the soil is a little dry often makes a big difference in the stand of a crop.

Market gardeners as a rule use large generous quantities of the best seed they can buy.

The man who runs the seed sower is usually an expert, and knows how much seed to use and how deep to cover it. He takes great pride in having his rows straight and evenly spaced. He steps each side of the row he sows, and so all the seed is covered lightly and evenly.

Seeding begins by March 30th and ends September 12th to 15th. Between those dates there are very few days when the farmer is not preparing some ground and sowing seed.

The up-to-date market gardener keeps his ground growing some crop from one end of the season to the other. He stands ready to clear off and replant any crop or spot which is available. It is seldom policy to wait for the gleanings of one crop before getting another started.

Sometimes a crop may not have started right because of poor seed or season; in case of such an accident the enterprising farmer calls on the plowman to bury the failure and start him in for a new crop.

A field of peas, for instance, well planted but with poor seed, gives plants too far apart for any chance of a profit and will not be allowed to rest long before the rows are opened up for beans or corn.

Where a frost has hit the beans or tomatoes hard the plowman will soon bury all signs of failure, and new seed or plants at once take their place. No half crops for the market gardener.

CROWDING THE GROUND FULL OF CROPS.

The market gardener does not leave much empty space between rows of stuff. In planting corn rows are made 4 feet apart; hills 18 to 24 inches. The space between the rows is sowed with spinach or radishes. These crops grow very quickly and are out of the way in time for the corn to develop. Spinach and radishes may be taken from between peas or beans and beets or carrots. Set lettuce may be taken from between beets or carrots. Seed lettuce, beans or peas may be taken from between tomatoes and squashes. Lettuce, beans, spinach, radishes, onions, peppers, or melons from between celery. We aim to crowd the ground to its utmost with any crop but weeds. It costs far less to stir the ground than to pull weeds.

WATERING.

The farmer who has an abundant supply of water can get more out of his land. He can forward crops very fast in clear hot weather and increase the quantity and improve the

quality of his crops. It has been called by some one the paramount fertilizer.

In transplanting and seeding a proper use of water makes success almost sure, and work can be carried on to the best advantage; too much water is bad, but too little is worse than none at all. Steam pumps are found on many farms, and wrought iron pipes are used to distribute the water to the different plots. Rubber hose, size $1\frac{1}{4}$ inches, is used to apply the water in field irrigation. The water pipes are run on the surface of the fields and are easily laid and taken up. They are piled on the sides of the fields when not in use, from September 20 to May 10. Water is pumped directly into the pipes from wells, ponds or streams. The best hose costs thirty cents a foot and will last about five years; $\frac{3}{4}$ -inch hose is best for bed work and is economical to use in fifty foot lengths. City or town water can be profitably used on small farms; there is no time or money spent in pumping, the pressure is constant and usually good. A low price per 1,000 gallons can often be obtained by large takers.

Whereas field irrigation is at times very profitable, and much more work can be done and larger crops obtained; many large farms do not use any and probably never will. They cultivate largely of corn, potatoes, squashes, peas and beans or other kinds of stuff planted wide apart or which occupy the land the entire season.

TILLAGE.

Considerable attention is given to thinning beets, carrots, lettuce, corn and squashes and some other stuff so as to enable it to develop well. Beets are thinned from four to six inches, carrots three inches, lettuce ten to twelve inches. Corn is planted four feet by eighteen to twenty-four inches, and thinned to four in a hill.

Peas and beans are sowed to stand six plants to the foot in rows two and one-half to three feet apart. Early peas, beans, tomatoes, corn and squashes are ridged or hilled up high to give more heat and bring the crop on faster. As soon as tomatoes have a good set on, we trim the tops back.

In all closely planted stuff we keep the slide hoes or weeders going often. In all crops we aim to stir the surface of soil as soon after rain as practicable. These early cultivations preserve the soil moisture and dry the surface so that many weed seeds never germinate. Some finger weeding has to be done, but it is usually done at time of thinning and is seldom done more than once.

After a crop of small stuff is taken from between coarse stuff the ground is thoroughly gone over with plow or cultivator, or both. Great care and good judgment have to be used so as not to injure the coarse stuff by letting the spinach, radishes, or other fine stuff stay too long, or by trampling the coarse when harvesting the fine.

Many gardeners who raise coarse stuff manure in the hill or row. It takes less manure and labor, and where the seed is sowed early is less liable to rot. They cover the manure with a little soil as soon as it is in the row and plant the seed on the soil instead of directly on the manure.

Early sowed seeds are more lightly covered than those sowed later in the season.

Many times in the busy season and hottest weather crops of spinach, radishes and beans grow so fast that they get no tillage.

Radishes will grow in seventeen to twenty-one days spinach in twenty-five to thirty days, lettuce in forty, and beans in thirty-seven days. Corn, sweet varieties, Crosby and Cory, have been picked to sell in sixty days from planting. Where stuff grows so fast it is of the finest quality and costs the least for tillage.

Harvesting begins as early as May tenth, from spring sown seed, and continues most every day till November fifteenth or twentieth, when good gardeners expect to have all their crops harvested. Celery, spinach, and cauliflower are the latest to come in.

In harvesting some kinds of stuff it is necessary to go over the plot ten to twenty times, taking only those plants which are ready. Lettuce, cauliflowers, cabbages and melons would come in the list.

Harvesting and putting up produce ready for market is a part of the work which needs to be nicely done. Produce must be put up right to command good prices. It must be clean, even in quality and well filled packages; in fact, it must be O. K. in every respect to demand the top price.

Two or three men who are expert at harvesting and putting up stuff will make a great impression on the looks of the stuff offered for sale. They are quick to see any way in which the looks of stuff may be improved. Such men command good wages and are welcome to them.

The dexterity of an expert or experienced man seems something marvellous to a green hand. His eye is trained to see, and he knows at a glance just what is fit to harvest and makes no fuss or false motions about it. In cutting lettuce, cabbage, cauliflower or in picking corn or melons he shows his value.

Workmen usually put in half time on holidays and receive full pay, but on some farms they who wish, work, and get pay, while those absent get none.

Strikes of workmen are seldom, if ever, known where large gangs are employed—twenty-five to seventy-five hands—about one-half the number is made up of boys or Italian women, and if they stay away for any reason, the farmer sees the rapidity with which the old hands will get up a load for market and leaves no doubt in his mind as to the difference in value between experienced and green hands.

The kind of a strike which the farmer likes best is one in which he has the stuff when the market is short and demand good. That is his chance to make money. The profits of the business are variable from year to year, some years being very good and some very poor.

The tendency of the market gardener is to use the profits of the business in adding to the equipment for doing business until he is well fitted out, and then he tries to find some new line in which to work in more capital.

On the large places where hands are employed there is found a blacksmith, engineer, painter, glazier, harness maker,

greenhouse man, stable man, book keeper and several foremen, each supplied with the tools and materials or helpers he may need to do his particular work. The help is worked in small gangs of seven to fifteen. Where such an equipment or plant is found, it has been developed only through years of experience and profitable business.

Winter work for the men consists largely of caring for the stored stuff and preparing it for market. Greenhouses and hotbeds make lots of work, for most of the labor in them is done by hand and the best culture is given to stuff under glass.

Electric lights in wash shed, shop and barn enable the farmer to keep his help working to advantage full time, and most farmers find the help is best satisfied where it has to put in full time. They do not expect to have their day cut short at either end.

The market garden farmer is a good business man. He tends strictly to business. He is continually studying the cost of production. He is trying to produce a little better article than anyone else, or to be in the market a little ahead of his neighbors. He studies and watches the market. He notes the change in popularity of vegetables. He tries to make his equipment first class. He sometimes enters into politics and is in most cases well able to discharge the duties of the office he holds.

He lives with his family in a modern house, often surrounded by beautiful trees, shrubs and lawns, which gives a general expression of peace and prosperity with which everyone who pursues his vocation intelligently should be rewarded.

He keeps a driving horse, and often a pair, and takes all the pleasure and prestige which success in any business gives its manager.

At the conclusion of this very practical address the speaker was kept busy for a time answering the many questions put to him. The discussion was participated in by many well-known market gardeners of the state, who were on hand to profit by Mr. Howard's lecture.

MR. J. H. HALE: I want to propose a question to the convention in relation to our Secretary's salary. We have carried on this Society for a good many years with our present Secretary doing ten times as much work as any of us would be willing to do, for a number of years, paying him at first \$50 a year. A couple of years ago we raised his salary to \$150 a year. I suppose he spends from two to five hours daily in our interest; he has helped us to build up a live, strong Society, and now that our Society is on a substantial financial basis I think it is right that we should remember his services, and I move that the Secretary's salary be increased from \$150 to \$250 a year.

MR. EDDY: I have had occasion to do a good deal of work with Secretary Miles, and I know he earns a larger salary than he is paid. I cheerfully second the motion.

J. N. BARNES: I know our Secretary has done a great deal of hard work for the Society, and I should be glad to have him receive an increase of salary.

Mr. L. C. Root and Dr. Britton also spoke, favoring the motion.

This motion was voted upon and unanimously passed.

SECRETARY MILES: I wish to extend my thanks to you, gentlemen, and especially to Mr. Hale for his kind thoughtfulness. If there is a single member in the Society who thinks I should not have this increase of salary, then I don't want it. I wish it thoroughly understood that I did not take this office eleven years ago, and have not continued yearly to accept a reelection, for the sake of the money return involved. If I had done so I should expect a salary at least as large as the working officials of other State Societies receive. I have done the most of my work for the love of it, and for the faith I have in the possibilities of this Society. If you will all support me as you have in the past, I am sure we can build up a still greater organization in the future and that we shall have something that we shall be even more proud of than we are of this organization to-day. The work is growing and if you feel I have attained success in any measure and this is your way of

expressing your confidence in me, then I thank you and I wish you to know that I appreciate very sincerely the action you have taken.

The remainder of the time until the meeting closed was devoted to discussing questions from the list, as follows:

Question 20: Name six most profitable apples for Connecticut planting.

J. N. BARNES: Rhode Island Greening, Fallawater, Fall Pippin, and William's Favorite. I would not name these as being the best apples, but I think they are most excellent.

A MEMBER: I would add Red Astrachan for one and Gravenstein for another, and also the Baldwin.

MR. STAPLES: I don't know so much about Connecticut needs, but in Maine the favorite apples are the Baldwin, Northern Spy and the King.

A MEMBER: Can Mr. Farnham give us any new varieties of strawberries?

MR. FARNHAM: I don't know that I can give you any really new varieties. I think the Chesapeake is a good berry; any of the standard varieties are all right.

PRESIDENT PUTNAM: I have found that the Mead is the best very late variety that I have tried.

Question No. 41: What is the cause of the specks of dry rot just under the skin of the Baldwin apple? Is this constitutional with the Baldwin, or is it simply a local manifestation? What other apples are susceptible to this trouble?

DR. CLINTON: I spoke of that in my report. Apparently weather conditions have something to do with it, although not surely. This year it has been more prominent in this State and the weather conditions have been unusual. So far as we know there is no one thing we can do to prevent it.

A few more questions on the program remained to be discussed, but as many of the members were leaving to take early trains for home, at 4.40 President Putnam brought the session to a close, declaring the Seventeenth Annual Meeting adjourned without date.

Those who remained after the adjournment gathered in the lower hall for a last look at the exhibits and chatting over the events of the meeting and sampling the fruit from the exhibition tables.

The pleasure and success of the work of the convention was favorably commented on, all agreeing that in many respects this annual meeting surpassed those of previous years.

It was well toward evening before the last fruit grower had departed and the gathering of 1908 passed into history.

Report of the Special Committee on Fruit Exhibit, with List of Awards.

CLASS I.

LARGEST AND BEST DISPLAY OF FRUITS.

Second Premium to E. E. Brown, Westland Farm, Pomfret.

CLASS II.

BEST COLLECTION OF FIVE VARIETIES OF MARKET APPLES.

Second Premium to Earl C. Roberts, Middletown.

CLASS VI.

BEST PACKAGE OF MARKET APPLES.

First Premium to W. A. Stocking & Sons, Weatogue	\$2.00
Second Premium to R. S. Griswold, Wethersfield	1.00
Honorable Mention, J. S. Forbes, Burnside.	

CLASS IV.

BEST SINGLE PLATES OF APPLES.

Ben Davis.

First Premium, H. E. Savage & Sons, Berlin .....	.50
Second Premium, H. I. Nettleton, Durham .....	.25

King.

First Premium, F. E. Tucker, Vernon .....	.50
Second Premium, George W. Staples, West Hartford .....	.25

Roxbury Russet.

First Premium, Earl C. Roberts, Middletown .....	.50
Second Premium, George W. Staples, West Hartford .....	.25

Baldwin.

First Premium, J. L. Rice, Wilbraham, Mass .....	.50
Second Premium, E. M. Burt, East Longmeadow .....	.25

Rhode Island Greening.

First Premium, Dennis Fenn, Milford .....	.50
Second Premium, Joseph Smith, Cheshire .....	.25

Pound Sweet.

First Premium, Dennis Fenn, Milford .....	.50
Second Premium, Joseph Smith, Cheshire .....	.25

Peck's Pleasant.

First Premium, L. J. Robertson, Manchester .....	.50
Second Premium, J. C. Eddy, Simsbury .....	.25

<i>Fall Pippin.</i>	
First Premium, H. E. Savage & Sons, Berlin .....	.50
Second Premium, Joseph Smith, Cheshire .....	.25
<i>Stark.</i>	
First Premium, Dennis Fenn, Milford .....	.50
Second Premium, Earl C. Roberts, Middletown .....	.25
<i>Pewaukee.</i>	
Second Premium, George W. Staples, West Hartford .....	.25
<i>Northern Spy.</i>	
First Premium, George W. Staples, West Hartford .....	.50
Second Premium, Joseph Smith, Cheshire .....	.25
<i>Rome Beauty.</i>	
Second Premium, F. B. Miller, Bloomfield .....	.25
<i>Seek-No-Further.</i>	
First Premium, E. J. Ellsworth, Ellington .....	.50
Second Premium, L. J. Robertson, Manchester .....	.25
<i>Mann.</i>	
First Premium, Thomas Callahan, Newington .....	.50
<i>Sutton.</i>	
First Premium, Dennis Fenn, Milford .....	.50
<i>Fallawater.</i>	
First Premium, Joseph Smith, Cheshire .....	.50
<i>Hubbardtson.</i>	
First Premium, Joseph Smith, Cheshire .....	.50
<i>Tuttle.</i>	
First Premium, H. E. Savage & Sons, Berlin .....	.50
<i>American Golden Russet.</i>	
Second Premium, H. E. Savage & Sons, Berlin .....	.25
<i>Talman Sweet.</i>	
Second Premium, H. E. Savage & Sons, Berlin .....	.25
<i>Limber Twig.</i>	
First Premium, H. E. Savage & Sons, Berlin .....	.50
<i>Dollar Greening.</i>	
First Premium, Earl C. Roberts, Middletown .....	.50
<i>Lady Sweet.</i>	
Second Premium, W. E. Waller, Bridgeport .....	.25
<i>Bananna.</i>	
First Premium, W. E. Waller, Bridgeport .....	.50
<i>Red Russet.</i>	
Second Premium, W. E. Waller, Bridgeport .....	.25

Report of the Special Committee on Implement Exhibit.

The following is a list of the firms represented in the display of Horticultural implements and supplies, spraying outfits, etc., etc.

The E. C. Brown Company, Rochester, New York.

A line of sprayers for every purpose, including hand sprayers of the compressed air type. Barrel and tank sprayers to be operated by hand; traction power sprayers for vineyard, field crop and orchard use; also a line of fittings and nozzles, including the new Brown's Automatic, making a variable spray either concentrated or diffused, and equal to a 1-2-3 or 4-cluster of nozzles; also a new automatic control valve for extension rods.

Cadwell & Jones, Hartford.

Display of The Deming Spray Pumps of various styles for all purposes, also a line of small hand sprayers for horticultural and stock uses; a line of pruning shears; Cypher's Incubators; U. S. Separators; display of "Scalecide," etc.

Field Force Pump Company, Elmira, New York.

A line of fittings for force pumps for all spraying purposes.

Goulds Manufacturing Company, Seneca Falls, New York.

A full line of barrel, tank and power pumps for spraying, also a line of nozzles and fixtures for same.

American Horticultural Distributing Company, Martinsburg, West Virginia.

A full line of Insecticides, including "Target" brand "Scale destroyer," arsenate of lead, fly sprayer, weed killer, also the "Protumna" Gas Sprayer.

The Cutaway Harrow Company, Higganum.

A full line of Cutaway double action harrows.

D. S. Walton Company, New York. F. H. Eno, agent, Simsbury, Conn.

A full line of berry baskets and tills, peach baskets, pansy baskets, Georgia baskets, and 1-2-3-4 Ingersol's baskets.

Hardie Spray Pumps. Harvey Jewell, Cromwell, Ct., agent.

A line and fittings of various sizes from small hand pumps to larger sizes.

C. R. Burr & Company, Manchester.

Attractive samples of nursery stock, including various kinds of fruit trees.

Barnes Brothers' Nursery Company, Yalesville.

Good display of fruit trees, plants, vines, etc.

Charles I. Allen, Terryville.

A line of berry and peach baskets.

W. F. Schultz & Company, Hartford, Spraymen and Foresters.

Samples of trees infested with various Scales.

The committee feels that because of the spreading of the Scale and various other insect foes, as well as fungous diseases, that this exhibition feature is one of growing interest to our members. As our present room will not allow of a much larger exhibit, the committee suggest that if a larger exhibition hall could be secured in the future, this feature might be enlarged with benefit to all concerned.

EVERETT E. BROWN,
M. L. COLEMAN,
L. C. ROOT,

Committee.

PART TWO

A Brief Record of Field Meetings, Exhibitions and Institutes Held in 1907.

Field Meetings, Summer of 1907.

With the advent of warm weather each year the thoughts of Connecticut fruit growers turn naturally to the field meetings of the Pomological Society, which have been so prominent and successful a feature of our work for many years.

These pleasant outdoor gatherings never fail to attract a very large attendance, for all who are in any way interested in fruit culture know from past experiences that these informal meetings on the larger fruit farms of the State are well worth their attention.

As an opportunity to observe and study conditions and methods of the most successful growers, to discuss common problems, and, withal, to enjoy a day of recreation and change, the fruit growers' field meeting is not equaled by any other kind of gathering.

The Connecticut Pomological Society holds the record for many such splendid meetings, and the only drawback to future events of this kind lies in the fact that but few places can be found where the facilities are ample enough to entertain the large crowds that would like to attend and which are increasing from year to year.

The season of 1907 promising generally favorable for the fruit grower, an appeal for invitations was sent out by President Putnam in early May. A number of responses were received, the President himself offering to start the campaign

by inviting the Society to pay a visit to Fernwood Farm in Litchfield, of which he is the efficient manager.

Accordingly the following announcement was sent out for the first

Field Meeting at Litchfield, July 2, 1907.

The Connecticut Pomological Society opens the Season of 1907 with a Field Meeting at Litchfield, Tuesday, July 2, 1907.

"Through the kindness of Mrs. Norton Goddard, the members of the Society and their friends are invited to visit her beautiful Estate, "Fernwood Farm," Litchfield,—of which our President, J. H. Putnam, is the Superintendent,—Tuesday, July 2d.

"Fernwood Farm is an Estate of some 500 acres where the visitors will see extensive Gardens, Greenhouses, Fruit crops such as strawberries, peaches, plums, apples, grapes, etc., in great variety, a dairy of registered Jerseys—small herd of Shetland Ponies—Berkshire Swine—Hampshire Sheep—flock of thoroughbred Poultry, etc., etc.

"The farm includes magnificent woodland, fine buildings, and altogether is an ideal place to spend a day of real pleasure and profit.

"It is also expected that side trips will be made to Dr. J. L. Buel's 'Spring Hill Farm,' with its extensive apple orchards, big herd of Devon Cattle, etc., also to the Estate of Mr. L. A. Ripley, one of the finest places in Litchfield, where may be seen an orchard of 10,000 apples, 16,000 currants, and a poultry plant containing 7,000 fowls.

"The Lunch will be served at 12.30 on the usual basket plan. Members are requested to bring well-filled baskets, the host furnishing tables, dishes, lemonade, coffee, etc.

"*Visitors should come to Torrington*, where busses will meet morning trains and furnish *free conveyance* to Litchfield.

"*Special Reduced Rates!* If 100 persons attend, the N. Y., N. H. & H. R. R. will grant half-fare rates returning from Torrington on certificate plan.

"Now, Brother Fruit Growers, make a special effort to come! and accept the invitation of our worthy President! Bring the Ladies and don't miss this trip to beautiful old Litchfield.

Members of the Connecticut Dairymen's Association and the State Poultry Association are also cordially invited to join us in attending this Field Day."

The day set for the meeting proved to be cloudy in the morning and with frequent showers, which made the attendance much less than it otherwise would have been. However, a goodly number of enthusiastic fruit men and their



UNION FIELD MEETING OF CONNECTICUT FRUIT GROWERS, FARMERS AND DAIRYMEN
At "Hill Stead Farm", Farmington, August 7, 1907.

wives were on hand for the drive from Torrington to Litchfield. This was the first field day of the Society to be held in Litchfield County, and many were glad of the opportunity to visit the famous old town of Litchfield, which, as everyone knows, is one of the most beautiful in the State. Arriving at Fernwood Farm, it was soon evident that no finer place could have been chosen for the opening outing of the season.

Beautifully situated on the hills overlooking the old town, Fernwood is not only an extensive estate, but is designed to be a successful farm and perfect country home as well. Much of it is splendidly laid out and planted in an attractive manner, while the natural beauties of woodland, hill and meadow are made the most of.

The forenoon was occupied by the visitors in looking over the home grounds, gardens, greenhouses and fine buildings (many of which are built of stone), under the guidance of Superintendent Putnam, whose excellent management was to be seen in every department.

As the noon hour approached, all present were invited to gather in the beautiful grove, where lunch had been spread under the direction of the ladies of the local Grange. By this time the attendance had increased to fully one hundred, and every one of the number enjoyed to the utmost the excellent repast.

The company was honored by the presence of the owner of Fernwood—Mrs. Norton Goddard, whom we shall all remember for her unbounded hospitality and many kindnesses.

After lunch the company lingered at the tables for a brief period of informal speaking, as is the custom at our field meetings. Secretary H. C. C. Miles presided and called first on our worthy president, Mr. Putnam. In his capacity as superintendent of Fernwood, and in behalf of Mrs. Goddard, Mr. Putnam extended a cordial welcome to the visitors.

He said he was more than pleased that so many of his friends had accepted the invitation to Litchfield and had made the long trip necessary to reach the meeting. He told his guests about the estate and how it had been built up and added.

to and what they were trying to do in the line of general farming, stock breeding, forestry, and fruit culture.

Prof. A. G. Gulley of the Connecticut Agricultural College responded on behalf of the Society, saying that we were all glad to be there and thanking Mr. Putnam for his efforts in our behalf. Prof. Gulley said it was a pleasant change to visit such a place as this, an example of a fine country home rather than a commercial fruit farm.

Worthy Master Webster spoke for the Litchfield Grange, which was so prominently identified with the success of the meeting.

The Rev. Mr. Hutchins spoke for the town of Litchfield, welcoming in a pleasant and witty way those present from other parts of the State. He said he had heard of the good work of the Society and was glad to be able to learn more of it.

Mr. Edwin Hoyt of New Canaan was called on and responded in his usual happy way. He referred to the good taste shown in the plantings at Fernwood and said it was an object lesson for us all. It is our duty, Mr. Hoyt said, to pay more attention to ornamenting our home grounds. We should do what we can with the means we have. It is to be the rule more and more to plant and improve the grounds about our country homes.

N. S. Platt of New Haven and L. C. Root, Farmington, also addressed the meeting, expressing their pleasure in the visit and all of its features.

This closed the program, and after all had had an opportunity to meet and chat with the hostess, the company broke up into parties, some for a drive through the woodland, others to visit the dairy barns, and still others for the trip to neighboring farms as arranged in the program.

Those who were so fortunate as to take the drive with Superintendent Putnam, several miles through the extensive woodland, saw a magnificent tract of timber which is most valuable and is being guarded and cared for according to the best forestry practices. There are few if any finer pieces of woodland in Connecticut.

A visit was made to the successful plum orchard and the plantings of peach and apple and other fruits, of which a good many are grown.

About 4 p. m., the visitors were rounded up for the start back to Torrington, which included a delightful drive through the fine streets of Litchfield.

When the time came to say good-bye, doubtless all realized that it had been a day of rare pleasure as well as profit, and that perhaps never before had the members of the Society been privileged to meet upon so beautiful a country estate as "Fernwood Farm," and our thanks were expressed to President Putnam, to whose kind efforts the privileges and pleasures of the day were so largely due.

Despite the unfavorable weather, the visit to Litchfield and "Fernwood Farm" was an event long to be remembered.

Second Field Meeting of the Season at Farmington, August 7, 1907.

In 1907, the Society was particularly honored in receiving invitations to visit two of the finest private estates in Connecticut.

The second of these invitations was for a Field Meeting at the Pope Estate in Farmington, of which Mr. Allen B. Cook, a prominent member of the Society, is the manager.

This field day was held Wednesday, August 7th, and was the occasion of one of the biggest outdoor gatherings of farmers ever held in the State. Through the kindness of the host, the invitation was also extended to the members of the Connecticut Dairymen's Association, so that, as a result, the attendance was very large, comprising farmers, fruit growers, dairymen and others to the number of over 500.

The beautiful town of Farmington, justly famous for its many natural attractions, and the splendid "Hill Stead Farm" of Mr. Pope, proved to be an ideal place for such a gathering, and with fine weather the event could not be otherwise than a grand success.

Most of the visitors came by trolley, via Hartford, special cars being run to accommodate the crowd.

On arrival, the guests were met and welcomed by Superintendent Cook and then turned loose to roam over the farm and study its various interesting features.

The Pope estate is beautifully located on the hills overlooking Farmington, comprises some 300 acres, is finely laid out and well worth visiting, as an example of a well-appointed and up-to-date country place.

There are apple orchards, extensive fruit and vegetable gardens, greenhouses, a peach orchard (trees reclaimed by careful pruning and cultivation), rose gardens, a sunken garden, splendid dairy of registered Guernseys and including a modern equipment of dairy buildings, silos, etc., flock of thoroughbred sheep, swine, etc., etc.

Electric power is utilized for many purposes on the farm. The grounds contain many fine trees, both fruit and shade, many of which have been transplanted at full size from long distances.

Every one of the visitors found something to see and admire and study with pleasure and profit. Even the ladies, who were present in very large numbers, were interested in the flower gardens and greenhouse, the buildings, lawns and the appointments of the Pope mansion, where they were cordially received and made to feel at home by Miss Theodate Pope, daughter of the owner.

Perhaps the crowning feature of the day's pleasure was the bountiful dinner, served on the lawn under the shade of the beautiful elms. Fully 500 were fed, and after lunch the company lingered about the tables for a brief period of informal speaking.

President J. H. Putnam of the Pomological Society presided, and the first speaker was Mr. A. B. Cook, superintendent of the farm, who welcomed the visitors, in the absence of Mr. Pope, and expressed for Miss Pope her pleasure in seeing so many present. Mr. Cook told of the history of the development of the estate, which has been remarkable in the nine short years of its existence. Dairying, hay, fruit, and

tree plantings have been the main lines of effort, and the farm now supports all the stock kept on it, which has been the object aimed at. Mr. Cook also explained how an old peach orchard had been reclaimed and is now producing profitable crops of fruit. Many choice apples are grown and a fine cold storage building is in successful operation, ice being used to carry the fruit and other products. The farm has been a frequent contributor and prize winner at the Society's fruit shows.

Mr. L. C. Root of Farmington followed Mr. Cook, and welcomed all to the town and to the extensive peach orchards of the Messrs. Root, which he said would be visited later in the day.

The address of welcome was responded to by Mr. Wilson H. Lee, Vice-President of the State Dairymen's Association, on behalf of that organization. Mr. Lee paid a high compliment to the Pope Farm and said that we should welcome wealthy men into our farm life in Connecticut.

Mr. J. H. Hale responded for the fruit growers, making, as usual, a splendid address. He said it was a rare treat to come to this beautiful farm home. There is much for us all to see and learn on a place of this kind, that is not strictly a commercial place. He was glad that people of means are appreciating the beauties of our Connecticut rural towns and are spending their money to create attractive homes and successful farms.

Prof. O. M. Taylor of the State Experiment Station, Geneva, N. Y., was called on next. He said he brought the greetings of the New York fruit growers and told of crop conditions in that section. The outlook is not very encouraging and fruits, especially, are variable.

H. O. Daniels, of Middletown, spoke next and was listened to with pleasure. He urged farmers to take more days of this kind for recreation and pleasure.

President Stimson of the Connecticut Agricultural College made a strong plea for the education of our farm boys and girls.

The Society's annual fruit exhibition, to be held next month at Berlin, was the subject of Prof. A. G. Gulley's talk, which came next.

Dairy Commissioner J. B. Noble made a fine address, as did B. A. Peck of Bristol, who represented the State Grange. Cattle Commissioner Averill, Prof. L. A. Clinton of Storrs and Daniel Webster of the Berlin Agricultural Society made interesting remarks, and the program was brought to a close by giving a hearty vote of thanks to Miss Pope for her invitation and the hospitalities of the day.

The remainder of the afternoon was devoted by those interested in dairying to a scoring demonstration in the dairy barns, and by the fruit growers to a trip to the orchards of T. H. & L. C. Root. While the trees this year are yielding only a partial crop of peaches and plums, the visitors saw one of the finest looking orchards in the state, with prospects for splendid returns in the future.

Meanwhile, the ladies in attendance were delightfully entertained in the house at afternoon tea by Miss Pope.

All in all, this was a day of rare pleasure and profit and a red-letter event for all who were fortunate enough to be present. Nothing was left undone that would add to the comfort and enjoyment of the visitors, and those who assisted in planning for and carrying out the event received the sincere thanks and appreciation of everyone present.

Not often is the Society privileged to hold a gathering under such favorable circumstances or with such successful results as the Field day at "Hill Stead Farm."

Field Meeting at Coventry.

The third Field meeting of the season was held September 3d at the farm of Andrew Kingsbury & Son in Coventry, Tolland County, in conjunction with the Dairymen's Association.

As the day was rainy and quite unfavorable for the trip, the attendance was not large. However, a pleasant and profitable meeting was held, most of the events taking place in and about the farm barns.

A good program of speaking had been arranged, but owing to the absence of most of the horticultural talkers, the discussions were largely along dairy lines. Dairying is the main business at the Kingsbury Farm, although a good many choice apples are grown and marketed.

Located on the fertile hills of Tolland County, conditions are favorable for apple orcharding of the highest order. By carefully following the most advanced methods, the Messrs. Kingsbury have developed a very successful and profitable farm, that was well worth the trip to see.

Closing Field Meeting of 1907, at J. H. Hale's, South Glastonbury, September 17.

THE CONNECTICUT POMOLOGICAL SOCIETY,

By Invitation of Mr. J. H. Hale,

Will round out the Field Meeting Season with a rousing gathering at his Fruit Farm, South Glastonbury, on Tuesday, the 17th.

Bro. Hale, in his letter of invitation, says: All who want to see the Hale Farm in an "off year" are cordially invited to come. As to what can be seen: there is the farm itself; orchards young and old, without fruit, that have pulled through the drought in fine shape; thirty to forty acres of cow peas, two-thirds of which have clover sown with them, in all stages of success and failure; over one hundred acres of clover, with turnips mixed for protection, that is just beginning to grow after the long wait for moisture; vineyards; small fruits, and general farm crops that are just waking up from the drought, and the only fruit in sight, a few apples.

The 150 acres of "rough land" tract that I had just tackled when the Society met here three years ago—and members on the quiet said that "Hale was a fool or crazy" is now just coming on in fine shape; so come and visit the "fool's" piece of work, it's worth seeing as an object lesson of what to do, or not to do.

Also we are just starting in again to clear another rough tract of similar nature as to woods and rocks and it should be a fine object lesson.

Here lunches will be eaten and afterward an informal meeting of the Society held for speeches and discussion, and from this point visitors can work their way down hill through the home-farm orchards and fields of small fruits to the home grounds, and so finish up the day.

The program of speaking will be of unusual interest. Mr. H. W. Collingwood, Editor of The Rural New-Yorker, Prof. F. A. Waugh of the Massachusetts Agricultural College, and others have been invited to attend and address the meeting.

Don't miss this discussion of important and timely topics.

Lunch will be strictly on the basketpicnic plan, so let no one forget the lunch basket.

FRUIT GROWERS Bring your family and friends, take a day off in an "off year" and visit this great fruit farm, with its many interesting features.

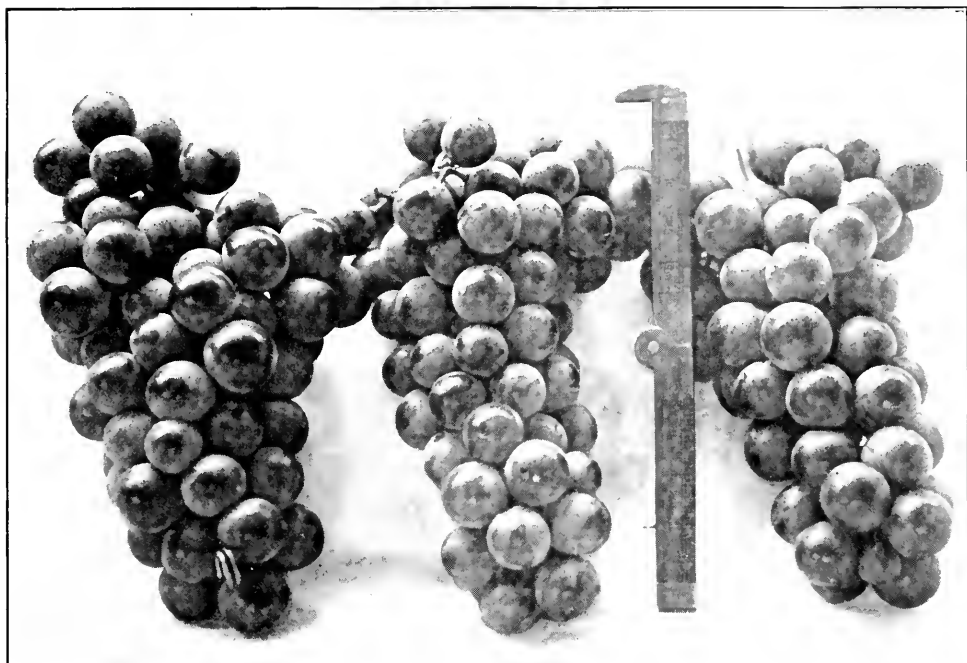
YOU'LL REGRET IT IF YOU MISS IT!

This was the somewhat unique invitation sent out for the meeting at Brother Hale's, and, when the day arrived, members of the Society and their friends in large numbers turned out to accept it and embrace the opportunity of visiting one of the most extensive fruit farms in the State. Connecticut fruit growers know by experience that there is much to see and study at Hale's, and, although an "off year," so it proved in this case.

Most of the visitors came by trolley, leaving the cars at a point some distance below Mr. Hale's home place, and here teams were in waiting to take us to the new hill-top orchards. We were soon in the midst of the new orchards where about 150 acres of extremely rough land has been cleared and planted to peaches and apples. Mr. Hale's foreman, a bright Italian, occupies a house in the center of this tract, from the highest point of which a magnificent view of the Connecticut River and the surrounding country is obtained. After looking over these thrifty young orchards the visitors wended their way down to a lower level, where a 100-acre-tract of equally rough land is being cleared for still further plantings.

To see this rough land, thick with wood and brush and big rocks, one would doubt the possibility or practicability of reclaiming it for orchard planting, but Mr. Hale has proved beyond question that it can be done, and the fine orchards already growing attest his faith in the location and soil, and his ability to tame this wild country and make it produce crops of choice fruit. It was indeed a revelation to us all to note the remarkable success of this work—a work that would tax

PLATE VII.



A FEW SNAPSHOTS OF EXHIBITS.
Society's Tenth Annual Exhibition, Berlin, 1907.

the courage of most fruit growers. To Mr. Hale must be given the credit of blazing the way in this line of work, as he has in other fruit growing methods.

In one of the pleasant shady spots the company halted for lunch, which was strictly a basket-picnic affair, according to the program. Of necessity, no tables could be spread and all the usual formalities were dispensed with. While this was a departure from our usual custom, yet all present enjoyed the dinner hour and, best of all, the dinner entailed no burden on the host, which is so often the case in these big field meetings.

After lunch the company assembled about a huge rock which made an ideal speaker's platform, and an informal meeting was held, presided over by President J. H. Putnam of the Society. Mr. Hale was first called upon and heartily welcomed the visitors. Mr. Hale gave a history of the orchard work and told what he hoped to accomplish on this rough woodland, as rough and unpromising as any in the State. Said he was glad to have us come and see the work, and would welcome the praise or criticism of his guests.

Mr. H. W. Collingwood of New York, Editor of *The Rural New-Yorker*, was the next speaker on the program, and in a very interesting address made some practical observations on Mr. Hale's work.

He said some men take from the land and leave nothing, but Brother Hale has realized the possibilities of these old hills and is making them worth more each year. Get trees of some sort growing on these hill-tops and leave something of value for posterity. There is a great deal more than mere money-making in this undertaking. Such work will have its influence on the future of this country. Apples and peaches will crown these hills in future years and be the glory of New England.

Much of this work would not be possible without the help of the foreigner. In this case it has been the Italian who has supplied the muscle and we should be thankful that such help is available. Mr. Collingwood predicted that apples would

one day be exported in greater volume than wheat is to-day. The New England Baldwin apple will be in great demand.

Prof. A. G. Gulley of the State Agricultural College spoke next, and among other things referred to his success in growing peaches on land where trees affected with the yellows had been removed. This was contrary to Mr. Hale's ideas and experience, but the Professor maintained that it was a safe practice. The speaker closed with a strong appeal for the Society's coming fruit exhibit, soon to be held, and urged all members to send in fruit for competition.

Another speaker on the program and one who was listened to with pleasure was Prof. F. A. Waugh of the Massachusetts Agricultural College, who touched in a humorous way on Brother Hale and his unique methods in orcharding. Prof. Waugh said, "After all the farm *home* is the great thing to be considered. Make it attractive, clean and comfortable for our families, and spend a little time and effort in planting about the home grounds."

Prof. Jarvis of the Storrs Experiment Station was invited to explain his new oil emulsion for the treatment of San José Scale.

He demonstrated the mixing of the wash and answered many questions put to him by the audience.

Prof. W. A. Henry, of Wisconsin and Connecticut, spoke next and paid a glowing tribute to Mr. Hale and his work. He said he respected a man who stands up for his Home and his State and has faith in his Soil.

Westerners like to brag of their big country and its products. New England people should learn to be proud, too, of their land.

There is no finer place on earth to build a home than right here in Connecticut.

F. D. Rogers, of Massachusetts, and James Van Alstyne of New York also made remarks expressing their pleasure in the visit and the opportunity to witness what Mr. Hale has accomplished.

After this the crowd of about 250 broke up into parties and devoted the remainder of the afternoon to walking and

driving about the older orchards and berry fields located near the Hale home. The condition of the trees in an "off year" was noted, the various cover crops under trial were studied and the features of the extensive fruit farm, generally, discussed with profit and pleasure. Thus closed another field day at the Hale farm, the scene of so many notable gatherings of the Society. Our best wishes and a thousand thanks to Brother Hale for his many kindnesses and hospitality to Connecticut fruit growers.

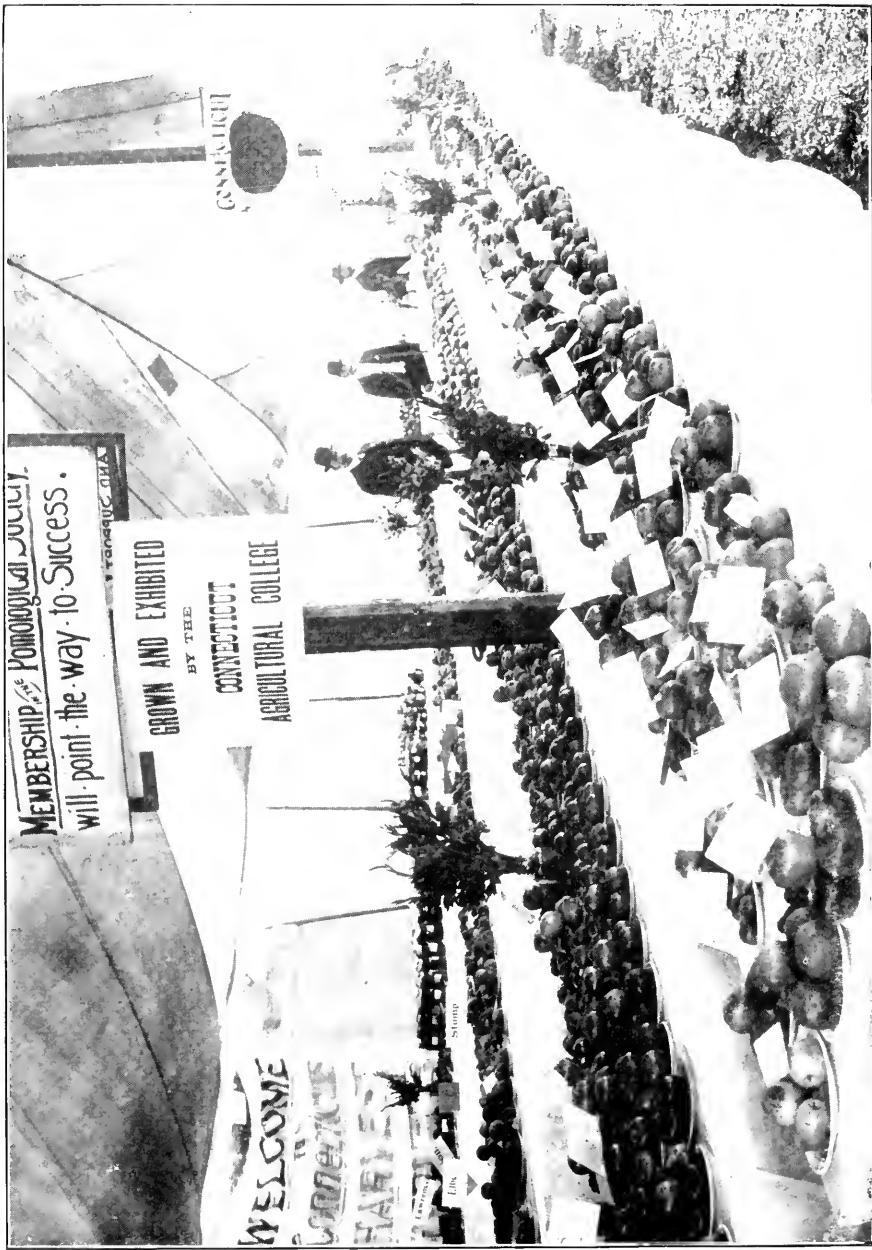
The Tenth Annual Exhibition of Fruits, 1907. Held at Berlin.

SCHEDULE OF PREMIUMS OFFERED.

FIRST DIVISION—COLLECTIONS.		1st.	2nd.	3rd.
Class 1.	Best general collection of fruits by grower, of which not more than two-thirds to be of apples. See Rule 7.	\$10.00	\$5.00	\$3.00
Class 2.	Best collection, 15 varieties of apples.	5.00	2.50	1.00
Class 3.	Best collection 10 varieties of apples.	3.00	1.50	.75
Class 4.	Best collection, 8 varieties of apples, for general purposes	2.00	1.00	.50
Class 5.	Best collection, 5 varieties of apples, for market use. See Rule 7.	3.00	1.50	.75
Class 6.	Best collection, 12 varieties of pears.	5.00	2.50	1.00
Class 7.	Best collection, 6 varieties of pears.	2.00	1.00	.50
Class 8.	Best collection, 12 varieties of grapes.	5.00	2.50	1.00
Class 9.	Best collection, 6 varieties of grapes.	2.00	1.00	.50
Class 10.	Best collection, 6 varieties of peaches.	2.00	1.00	.50

SECOND DIVISION—SINGLE PLATES.

Class 1.	Best single plates of following varieties of Apples, each	\$1.00	\$.50	\$.25
	Red Astrachan, Sweet Bough, Williams' Favorite, Oldenburg, Porter, Gravenstein, Red Bictigheimer, Fameuse, Fall Pippin, Maiden Blush, Twenty Ounce, Hurlburt, Wealthy, Rome Beauty, Baldwin, Tahman Sweet, Cogswell, Hubbardston, Jonathan, Gilliflower, King, Northern Spy, Belleflower, Pewaukee, McIntosh Red, Red Canada, Sutton, Wagener, Westfield, Jacob's Sweet, Fallwater, Golden Russett, Roxbury Russett, Newtown Pippin, Peck's Pleasant, R. I. Greening, Ben Davis, Hyslop Crab, and for all other worthy varieties, premiums of one-half the regular amounts are offered: That is, 50c., 25c., and 15c., respectively.			
Class 2.	Best single plate of following varieties of Pears, each	\$1.00	\$.50	\$.25
	Clapp's, Bartlett, Bose, Angouleme, Louise Bonne, Diel, Onondaga, Anjou, Lucrative, Boussock, Buffum, Howell, Flemish Beauty, Mt. Vernon, Seckel, Clairgeau, Lawrence, Sheldon, Easter Buerre, Keiffer, Le Conte, Nelis. Of other worthy varieties, not to exceed ten.			
Class 3.	Best single plate of following varieties of Grapes, each	\$1.00	\$.50	\$.25
	Moore's Early, Brighton, Concord, Eaton, Hartford, Wilder, Worden, Isabella, Agawam, Delaware,			



TENTH ANNUAL FALL EXHIBITION, BERLIN, 1907.

Looking down the long lines of tables filled with exhibits of choice fruit, representing every section of Connecticut.

Diana, Diamond, Jefferson, Campbell's Early, Clinton, Green Mountain, Catawba, Lnadley, Salem, Empire State, Martha, Niagara, Pocklington. *Of other worthy varieties, not to exceed ten.*

Class 4.	Peaches and plums, each valuable variety	\$1.00	\$.50	\$.25
Class 5.	Quince, each valuable variety.....	1.00	.50	.25
Class 6.	Grapes grown under glass, one bunch each variety	1.00	.75	.50
Class 7.	Cranberries, best exhibit, any variety..	2.00	1.00	

THIRD DIVISION—CANNED FRUITS, JELLIES, ETC.

For Table Use.

(Wives and daughters of members may compete in this division without payment of any membership fee.)

Class 1.	Best collection canned fruit, 15 varieties	\$6.00	\$3.00	\$2.00
Class 2.	Best collection canned fruit, 8 varieties	4.00	2.00	1.00
Class 3.	Best collection canned berries, 6 varieties. See Rule 8	3.00	2.00	1.00
Class 4.	Best collection pickles, 6 kinds, one quart each	3.00	2.00	1.00
Class 5.	Best collection jellies, 6 kinds.....	3.00	2.00	1.00
Class 6.	Best single can of the following fruits: Strawberries, Blackberries, Black and Red Raspberries, Currants, Gooseberries, Huckleberries, Cranberries, Grapes, Pears, Yellow and White Peaches, Apples, Quinces, Crab Apples, Cherries, Pineapples, European Plums, and Japan Plums. (See Rule 8.)	.75	.50	.25
Class 7.	Best single jar jelly made from above named fruits .....	.75	.50	.25
Class 8.	Best sample unfermented fruit juice, each kind, not to exceed six.....	.75	.50	.25

FOURTH DIVISION—NUTS, ETC.

Class 1.	Best specimen any variety of cultivated nuts	\$1.00	\$.50	\$.25
Class 2.	Best sample of native nuts, any kind...	1.00	.50	.25
Class 3.	Best collection native nuts, made by boy or girl and correctly named (exhibitors in this class not required to be members of the Society).....	2.00	1.00	.50
Class 4.	Best arranged table piece of home-grown fruits	2.00	1.00	.50
Class 5.	Best packed barrel, choice market apples	5.00	2.50	1.00
Class 6.	Best box, choice apples	2.00	1.00	.50
Class 7.	Best standard basket choice peaches...	2.00	1.00	.50
Class 8.	Best peck basket choice peaches.....	1.00	.50	.25
Class 9.	Best package choice grapes	1.00	.50	.25
Class 10.	Articles not classified, for which discretionary premiums may be awarded.			

RULES OF THE EXHIBITION.

Rule 1. All exhibits must be received for entry not later than noon of Tuesday, September 24th, and must be in place by 6 p. m., as judging will begin promptly on opening of second day—Wednesday. (This rule will be strictly enforced.)

2. Entries of collections in First and Third Divisions should be made with the Secretary on or before Friday, September 20th, using enclosed entry blank for the purpose, that proper table room may be provided.

3. All articles entered, except in Fourth Division, must be grown or prepared by the exhibitor.

4. All fruits shall be correctly labeled (if possible) and except grapes and crab apples, five specimens, neither more or less, shall make a plate, either single or in collection.

Of crab apples ten species, and of grapes three bunches, shall make a plate, except where noted. The collections also shall embrace just the required number of plates.

5. No exhibitor shall make more than one entry for the same premium, nor enter the same plate for more than one premium.

6. In the various collections, the value of the varieties shown, as well as the conditions of the specimens, will be considered in making the award.

7. Entries in Division 1, Class 1, must not contain over two-thirds apples, or over one-fourth of any other single class of fruit. Division 1, Class 5, is intended to draw out the growers' ideas of value of varieties. In making the award this will be considered, as well as the condition of the specimens shown.

8. Entries of different kinds of Canned Fruit must be self-evident; that is, separate varieties of "red raspberries" or "yellow peaches" will not be considered as distinct kinds. Any or all cans to be opened for sampling at the discretion of the judges.

9. Lists of varieties in all collections must be made and placed with entry card on collection.

10. As the object of the Society is to encourage the growth of fruits of fine quality, wormy or diseased specimens or those infested with San José Scale will not be allowed to compete.

11. Premiums will be awarded to members of the Society only, except as noted in Third Division.

12. No exhibit shall be removed without the consent of the committee, until the close of the meeting. Exhibitors are requested to state whether fruit is to be returned to them, or donated to the Society.

SPECIAL FEATURE.

Complete Display of Spraying Machinery and Spraying Materials.—Manufacturers and dealers will be given space to exhibit spraying apparatus and supplies of every description. This will afford a splendid chance to study different makes of Pumps, and see them in actual operation. We must all spray, and no grower should miss this exhibit!

The Society's tenth annual Fall exhibition, for which the above list of prizes was offered, was held in connection with the fair of the Berlin Agricultural Society, September 24-27, 1907. As usual, invitations were received from a number of fairs in the State. On account of the unfavorable outlook for fruit in 1907 it was at first feared that the exhibition would have to be given up, but at the very urgent request of the Berlin fair managers, it was finally decided to hold the show and accept Berlin's offer. When the time for the exhibition arrived conditions had so much improved, especially in the case of the apple crop, that results fully justified carrying out the exhibit according to our customary plans. Everyone concerned was agreeably surprised at the splendid collection of fruit that was brought together, as it was not thought possible that so much perfect fruit could be found in the State in such a decidedly "off year." Even peaches, which were the lightest crop in many years, were shown in fairly large amount and splendid condition.

The show was well supported by our older exhibitors, while many new growers joined the ranks and won their share of the prizes.

Owing to rainy weather early in the week the Berlin Fair continued through five days, so that our exhibition was visited by more people than ever before and we believe was thoroughly appreciated and worthy the high praise heard on every hand.

It is evident that no other branch of the Society's work is productive of more benefit to the State than are these annual fruit exhibitions. They benefit not only the growers, but educate the consuming public to know what good fruit really is, and, best of all, they demonstrate most clearly what the soil of Connecticut is capable of producing in the line of the choicest fruit products.

The report of the Committee on Exhibits gives the details of the exhibition so fully that it is unnecessary to devote further space to it here.

Suffice it to say that the 1907 exhibition proved as successful as any of its predecessors. Most of the judging was

efficiently performed by Prof. S. T. Maynard of Massachusetts, the well-known pomological authority. The competition in many of the classes was very keen, and the whole show reflected credit on those growers who contributed exhibits. At the close of the exhibition much of the fruit was readily disposed of at good prices, while some of the choicest specimens were sent to the Jamestown Exposition, where they formed a notable addition to Connecticut's agricultural display.

Premiums amounting to \$271.90 were awarded, divided among about fifty exhibitors.

Mention has already been made in the report of the Secretary and elsewhere of the splendid display of fruits made by this Society for the meeting of the National Grange at Hartford, November 13-20, 1907.

Practically all of the fruit was furnished by members of the Society, who took special pride in making the exhibit as fine as possible. The display was tastefully arranged in one of the corridors of the State Capitol and attracted the favorable attention of the thousands of visitors in attendance at the Grange meeting from all over the United States.

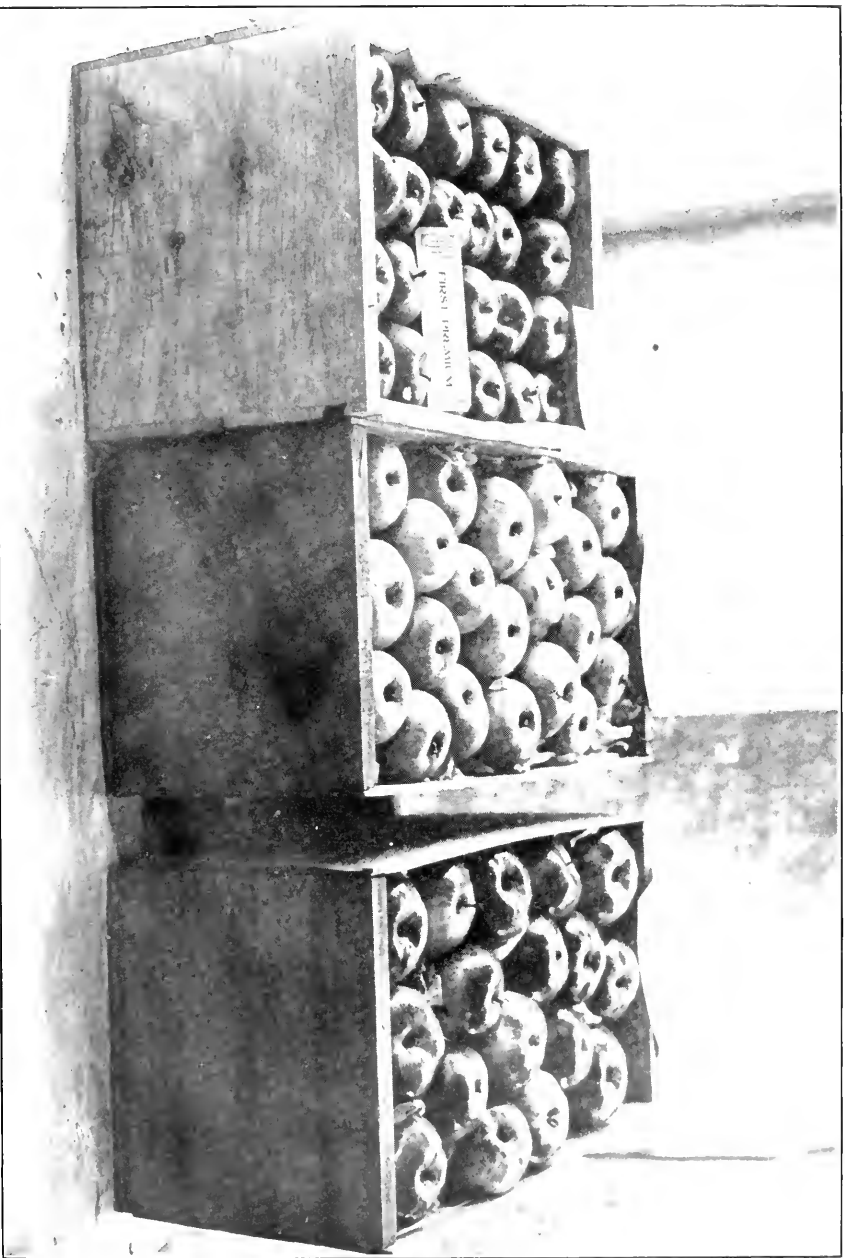
The display comprised 180 plates of apples, 40 plates of pears, 10 plates of quinces, a special display of 425 specimens of apples, 84 plates of fruit from the Connecticut Agricultural College, besides exhibits of apples in pyramids and packed boxes. The half-tone picture facing page 29 shows the arrangement of the exhibits.

The Society received the thanks of the Connecticut State Grange and the National Grange for their successful efforts, and it is certain that nothing finer in the way of a fruit exhibit has ever been seen in our State.

Institute Work in 1907.

This branch of the Society's work has been fully covered in the annual report of the Secretary (see page 6), and it is unnecessary to more than summarize the matter here.

During 1907 Farmers' Institutes in Connecticut were carried on along about the same lines as in previous years, the



SOME FIRST PREMIUM BOXES OF MARKET APPLES.

Perfect as to packing and quality of the fruit.

several State Agricultural organizations working independently of each other to a great extent. This lack of coöperation has always handicapped the work and prevented its fullest success, so that last year fewer institutes were held than in former years.

While it has been the policy of the Pomological Society to coöperate with the other State associations whenever possible, most of our efforts the past year have been directed to holding Fruit Growers' Institutes, believing that in this way we were making the best use of the State funds placed at our disposal, and at the same time benefitting the fruit interests of the State, which is the chief aim of our organization. However, where local conditions demanded it, we have given poultry and dairy topics a place on the program, and drawn speakers from the State Poultry and Dairymen's Associations.

The agricultural interests of our State are so varied that institute work should be conducted along the broadest possible lines, and it is only by so doing that the work can be made of greatest value to the people of the rural towns.

The institute season is usually reckoned from November around to November again, and taking up the Society's record where the last Annual Report left off, we have twelve institutes to make the record for 1907.

As usual, most of the invitations for these meetings came from local granges, and it is to their support and coöperation that a large share of the credit is due. The list of places and dates of the season's institutes is as follows: Norwich, December 13, 1906; Thompson, December, 14; Glastonbury, January 23, 1907; Union, January 24; Rockville, January 25; Middlefield, February 19; Hebron, February 27; Higganum, March 1; East Haddam, March 15; Milford, March 20; Danielson, March 22, and Berlin, March 26.

Twenty-two sessions were held, with an aggregate attendance of over 800 persons.

Eighteen speakers were employed, comprising practical farmers and fruit growers, as well as representatives from the experiment stations and the Agricultural College. Too much cannot be said in praise of the efforts of these institute work-

ers, who sacrificed time and means to make the meetings profitable and successful. Real missionaries they are, carrying the gospel of better farming and farm life to the remote corners of the State. It is to be regretted that we have not the space here to reproduce some of the many splendid addresses and discussions that make up our institute programs.

The American Association of Institute Workers held its convention in Washington in October, and your Secretary again attended as delegate from this Society. Returning from that meeting we were more than ever convinced of the great possibilities for institute work here in Connecticut if conducted along the right lines and under a system as well organized as that in operation in other States. Since then the subject has been agitated anew, with the result that a conference of workers from the several State organizations interested in institute work in Connecticut was held in November, 1907, when a plan was adopted looking to closer coöperation between those engaged in carrying on institutes. This plan was put in operation late in the winter of 1908, and it is too early yet to judge of the results. While any arrangement of this sort necessarily has its limitations and can never take the place of definite legislation in the matter, it strongly indicates that there is a desire for better methods in our institute work, and that the near future must see the adoption of an adequate institute system for Connecticut farmers.

NECROLOGY

Time flows swiftly on and with each recurring annual Roll Call we find an ever increasing number of our fellow-workers who "have been called to lay down their implements upon earth" to join the great company of those who do now rest from their labors.

Death has robbed us of their presence, but their loving memory remains.

It is therefore eminently fitting that amidst the activity and success that attends our work and our meetings that we should consecrate these brief pages of our report to the commemoration of those of our members, who, during the past year, have joined the innumerable caravan to that mysterious bourne, where each shall take his chamber in the silent Halls of Death.

Since our last Report was issued the following list of deaths in our membership has been reported to the Secretary's office:

CYRUS HART BLAIR, *of Newington*, died in January, 1907. He had been a member of the Society since 1905.

BENJAMIN F. COLBY, *of Kensington*, died in May, 1907. He was a well-known fruit grower and an active member of the Society since 1903.

ROSWELL ALLEN MOORE, *of Kensington*, town of Berlin, who was Treasurer of this Society from 1883 to 1905, passed away at his home September 19, 1907. The following sketch of his life is taken from a New Britain paper:

"Roswell A. Moore, postmaster of Kensington for the last fifteen years, one of the most prominent business men in this section, died at his home there last evening, at the age of seventy-

five years. Mr. Moore had been in feeble physical condition for some time, but intellectually he was bright and keen to the last. The direct cause of his death was due to nervous trouble and general debility.

Mr. Moore was the son of Roswell and Lucy Allen Moore, of Southington, and was born at the old Moore homestead in Kensington on September 3, 1832. He attended the district school until he was fourteen years old, when he entered Worthington academy, studying there for a period of two years. After leaving Worthington academy Mr. Moore entered the New Britain High school, from which he graduated in 1854. He also attended the State Normal school in New Britain for a year.

At the completion of his studies he returned to Kensington to engage with his father and brother in milling and manufacturing. Their business was located in those days on the banks of the stream which flows from Hart's upper pond and was valuable for its fine water power facilities. The Moores were engaged in the manufacture of steelyards and hardware. They also manufactured and successfully introduced hydraulic cement into the markets of this country. They were pioneers in this line.

Later Mr. Moore and his son, R. A. Moore, jr., commenced the manufacture of buckles and other light hardware farther down the stream in the village of Kensington. This place was destroyed by fire a few years ago and the business was reestablished in the building formerly used by the old terra cotta company on the Beech Swamp road. In 1905 the business was disposed of to a syndicate.

Mr. Moore was possessed of an exceptionally bright mind and was a keen and interested observer of events. He represented the town in various capacities. In 1881 he represented Berlin in the Legislature. He was treasurer of District No. 1 for thirty years. Besides this, in his lifetime he was active in the settling of many estates. Mr. Moore was first appointed postmaster of Kensington in 1872. He held office until 1881, when he was elected to the Legislature. He was again appointed postmaster in 1892 and has been successively re-appointed since. During Mr. Moore's administration the Kensington office has grown from a fourth-class office to that of a presidential one.

Besides being a busy manufacturer and holding many public trusts, Mr. Moore was interested in horticulture and fruit growing. He was treasurer of the Connecticut Pomological Society until 1905, when, owing to ill health, he declined re-appointment. He was also at one time a member of the State Board of Agriculture.

Mr. Moore was a lineal descendant of Deacon John Moore, the progenitor of the family in America, who came from England in 1630 on the "Mary and John," the same vessel that brought the Edwards family and the ancestors of General Grant to America. The Moores settled in Windsor, the same year that Thomas Hooker and his company came to Hartford. Mr. Moore's great-grandfather, Roswell Moore, settled in Southington, where he followed agricultural pursuits. His son was also a farmer and later a manufacturer. His son moved to Kensington in the early part of the nineteenth century to engage in manufacturing. He had three children, Ellen Eliza, born in Kensington December 30, 1828. She attended Mount Holyoke when Mary Lyon, the founder, was principal. She died in 1860. The second child was Nelson Augustus. He was famous as a landscape artist. He died several years ago. Roswell Allen Moore, who died last night, was the third child.

Mr. Moore is survived by a wife and two children, Roswell A., jr., and Miss Marjorie Moore."

Perhaps no death in our membership will be felt more keenly than that of Mr. Moore. He was actively interested in the organization of the Society, was one of the charter members, and for twelve years filled the position of Treasurer with ability and to the satisfaction of all. Only Mr. Moore's failing health compelled the Society, in 1905, to elect another in his place.

To the Secretary Mr. Moore's death comes as a personal loss. Having been so closely associated with him for many years we had learned to love and respect him. Kind and helpful in disposition, we never appealed to him in vain for assistance, counsel and advice. He was a friend and co-laborer in the truest sense, and it was indeed a rare privilege to have known and worked with him. Mr. Moore was interested in fruits for very love of their culture, and was nearly all of his life a successful grower of a great variety of fruit, but especially of peaches, of which he had at one time large orchards. He made a study of pomology and was looked upon as an authority in such matters. His knowledge of varieties made his services as judge at fairs and exhibitions of particular value. During the existence of the Peach Yellows law in this State Mr. Moore served as one of the inspectors.

of orchards, and was frequently called upon for expert advice in contested cases.

Mr. Moore was also passionately fond of flowers and their culture, his home being always surrounded by these beauties of nature. He filled a large place in his home, his town, the State, in our Society and among his friends—a place no other can ever fill. Roswell A. Moore was one of God's noblemen, and we shall ever hold him in loving memory.

WALTER A. WARREN, of *Rockville*, died suddenly late in the year 1907. Mr. Warren was a young man of fine character, and his loss is deeply felt by his family and the many members of the Society who knew him. He was a graduate of the Connecticut Agricultural College, and for a number of years afterward filled the position of assistant to Prof. Gulley in the Department of Horticulture. At the time of his death he was associated with Mr. Gulley in the management of an extensive fruit farm near Rockville.

FREDERIC ELLSWORTH, of *Hartford*, died in January, 1908. He had been an interested member of the Society for many years and was a regular attendant at all of the meetings. Mr. Ellsworth was well known in Hartford and vicinity as a successful farmer and also for many years as a dealer in fertilizers and agricultural supplies.

While this volume is in preparation comes the sad news of the death of MR. EDWIN HOYT, of *New Canaan*, who passed away on April 17, 1908.

Mr. Hoyt had been sick only a few days and therefore his passing came as a great shock to his wide circle of friends.

Mr. Hoyt was actively connected with the Society and its work from its first inception, and had held various positions of prominence in the organization.

He thoroughly believed in organization for the farmer and fruit grower, and embraced every opportunity to urge his brother growers to join hands and work together for the advancement of their business.

Mr. Hoyt held a national reputation as a nurseryman and a fruit grower, and was an acknowledged authority in matters relating to pomology. His services were in demand as a speaker at fruit meetings in this and other States, and he never failed to impress his hearers by his forceful and instructive talks. The growing of apples was one of Mr. Hoyt's particular hobbies, for he possessed great faith in the future possibilities of this fruit.

He was of a kindly and genial nature, and by his many sterling qualities endeared himself to all who knew him. We shall miss his well-known face and voice at our gatherings, for he delighted to meet with the Society whenever his large business interests would allow, and he never failed to contribute something of value to the meeting.

In the death of Edwin Hoyt, Connecticut loses a great horticulturist and a good citizen.

His funeral was attended from his beautiful home in New Canaan on April 20, and the very large company of grief-stricken relatives and friends attested the universal esteem in which Mr. Hoyt was held. Each one present felt that he had lost a true friend. What greater reward than this can a man receive?

The following tribute to Mr. Hoyt is reprinted from a leading horticultural journal:

"Mr. Edwin Hoyt, of the firm of Stephen Hoyt's Sons Co., of New Canaan, Conn., died April 17, and was buried April 20. In the death of Mr. Hoyt, New England loses one of its oldest nurserymen. His age was 76 years. He died of pneumonia with other complications, having been taken ill on Sunday, the 12th day of April.


The nursery business of Stephen Hoyt's Sons Co. was started in 1849 by Stephen Hoyt, the father of the deceased. After Stephen Hoyt's demise, the business of this firm was carried on by his sons, James Hoyt and the deceased, under the firm name of Stephen Hoyt's Sons. In 1904, the business was incorporated under the name of Stephen Hoyt's Sons Co., of which Edwin Hoyt became president and manager, and remained so until the time of his death. He was uniformly courteous to the younger firms of nurserymen, to dealers in nursery stock and to all customers. Although at the ripe age of 76, he was as active in business and his

intellect was as clear as that of a man in the prime of life, up to the time that he was forced to take to his bed.

He was a member of the Grange and of the Pomological Society of the State, and was considered an authority on horticultural questions. In the nursery business, to which he was strongly devoted, he was ambitious, energetic, far-seeing, and a great worker. Under his management, the business grew to be one of the largest, if not the largest, nursery firm in New England, but with all his ambition, he was a just man and no mistakes were made in his business which he would not rectify if properly explained to him.

Mr. Hoyt was in 1888 a member of the State Legislature from New Canaan and a member of the State Board of Agriculture, Vice-President of the Board of Control of Connecticut Experiment Station and a member of the Connecticut Nurserymen's Association, Chairman of the Board of Trustees in the First Congregational Church of New Canaan and a member of the Board of Deacons at the time of his death, and otherwise actively interested in the town in which he lived. He was President of the First National Bank of New Canaan, and had large property interests. He is survived by his brother James, a widow, three daughters, and one son. The funeral was held at his residence and was largely attended by people from different parts of the State and from New York, as well as by his neighbors and friends. The sad and sacred duty of bearing the remains to the grave was performed by his foreman, Edward Kelley, and his brothers, Frank, James and Harry Kelley, all assistant foremen in the nursery for many years.

So ends the career on this earth of one of our best known Christian business men."



LIST OF MEMBERS

OF THE

CONNECTICUT POMOLOGICAL SOCIETY

1908

[This list is corrected to June, 1908.]

- Abbe, Linden S., Hazardville.
 Abbey, Mrs. C. Pelton, Gildersleeve.
 Adams, Joseph, Westport.
 Albiston, Joseph, So. Manchester.
 Allen, Chas. D., Cheshire.
 Allen, Chas. L., Pequabuck.
 Alsop, J. W., Avon.
 Allyn, W. L., Mystic.
 American Horticultural Distributing Co., Martinsburg, W. Va.
 Andrews, Cornelius, New Britain.
 Andrews, J. E., New Britain.
 Apothecaries Hall Co., Waterbury.
 Armstrong, Lee E., Oxford.
 *Ashton, Frank B., Middletown.
 Atkins, F. C., Hartford, 12 South Highland street.
 Atkins, Mrs. F. C., Hartford, 12 South Highland street.
 Atkins, T. J., Middletown.
 Atwater, Edwin B., New Haven, Box 207.
 Atwood, C. B., Watertown.
 Atwood, Oscar F., Brooklyn.
 Augur, Alfred H., Middlefield.
 Averill, H. O., Washington Depot.
 Bacon, Eben W., Middletown, R. F. D. No. 1.
 Bailey, F. B., Durham.
 Bailey, Miss Alice R., Durham.
 Bailey, Mrs. F. B., Durham.
 Baird, J. H., Fort Valley, Ga.
 Baker, C. H., Andover.
 Baker, Mrs. C. H., Andover.
 Barker, C. A., Westville, R. F. D.
 Barker, J. Harry, Branford.
 Bartlett, Francis A., White Plains, N. Y.
 Baldwin, Walter H., Cheshire.
 Barber, Henry A., Danbury.
 Barber, Joseph, Rockville, R. D.
 Barber, Mrs. Joseph, Rockville.
 Bard, J. Sprague, Brooklyn.
 Barnes Bros., Yalesville.
 Barnes, Edward H., New Haven.
 Barnes, Erva L., Norwich, R. F. D. No. 3.
 Barnes, J. Norris, Yalesville.
 Barnes, John R., Yalesville.
 Barton, Richard, Thompson.
 Bassett, Chas. E., Fennville, Mich.
 Bassett, George E., Clintonville.
 Baumgardt, H. F., Highwood.
 Beach, A. S., Bridgeport, R. F. D.
 Beach, L. A., Wallingford.
 Beach, J. H., Branford.
 Beach, Z. P., Wallingford.
 Beaupain, R. T., So. Norwalk, 192 West street.
 Beckwith, G. C., New Hartford, R. F. D.
 Beckwith, W. M., New Hartford, R. F. D.
 Beebe, C. C., Wilbraham, Mass.
 Beers F. H., Brookfield Centre.
 Beisiegel, Jacob, Woodbridge.
 Benham, Leonard M., Highwood.
 Benham, Wilbur H., Highwood.
 Benjamin, Wm., East Granby.
 Bigelow, E. W., Litchfield.
 Birdsey, E. T., Middletown.
 Bishop, Mark, Cheshire.
 Blakeman, J. H., Oronoque.
 Blakeman, Frank E., Oronoque.
 Bliss, Ethelbert, Lindlow, Mass., R. F. D.
 Boardman, F. E., Middletown, R. F. D.
 Bolles, C. P., Wilbraham, Mass.
 Bonner, Chas. W., Storrs.
 Boynton, C. C., Cheshire.
 Brandegee, A. L., Farmington.
 Brewer, C. S., Hartford.
 Bridge, H. J., Hazardville.

*Life Member.

- Brinsmade, W. H. Bridgeport, R. F. D. No. 4.
 Britton, Prof. W. E., Experiment Station, New Haven.
 Brinker, Chas., New York City, 25 W. 33d street.
 Brockett, Ernest R., North Haven.
 Bronson, N. S., New Haven.
 Brooks, H. R., Glastonbury.
 Brooks, John N., Torrington.
 Brown, A. E., Columbia.
 Brown, A. N., Wyoming, Del.
 *Brown, Everett E., Pomfret Center.
 Brown, H. H., Monsey, N. Y.
 Brown, H. W., Hartford, 43 Main street.
 *Brown, J. Stanford, Yonkers, N. Y.
 Brown, Stanton F., Poquonock.
 Brown, W. A., New Britain, 263 Kelsey street.
 Brown, W. S. Edward, New Britain, 5 Chapman street.
 Brownson, S. B., Shelton.
 Brundage, Benj., Danbury, R. F. D. No. 20.
 Brush, G. M., New Fairfield.
 Burr, C. R., Manchester.
 Burr, W. H., Westport.
 Buell, H. B., Eastford.
 Burnham, C. N., Middlefield.
 Burr, Eugene O., Higganum.
 Burr, O. Perry, Storrs.
 Burt, E. M., East Long Meadow, Mass.
 Burton, Geo. W., Beacon Falls.
 Bushnell, Huber, Berlin.
 Bushnell, Mrs. Huber, Berlin.
 Bushnell, J. C., Farmington.
 Butler, George E., Meriden.
 Butler, George S., Cromwell.
 Byington, Jas. L., Forestville.
 Callahan, Thos., Newington.
 Camp, David N., New Britain.
 Canning, Wm., Milford.
 Cass, Chas. F., Waterbury, R. F. D., No. 1.
 Caulfield, J. H., Warehouse Point, R. F. D.
 Chamberlain, F. A., Terryville.
 Cheney, Seth Leslie, So. Manchester.
 Child, C. H., Woodstock.
 Christian, W. W., Berlin.
 Church, Foster P., Higganum.
 Churchill, Fred G., Wethersfield.
 Churchill, Levi B., Wethersfield.
 Churchill, Stephen, Wethersfield.
 Clark, A. L., Waterbury.
 Clark, Arthur F., Higganum.
 Clark, E. H., Berlin.
 Clark, Frank T., Beacon Falls.
 †Clark, George M., Higganum.
 Clark, H. E., Middlebury.
 Clark, J. Maxwell, North Hadley, Mass.
 Clark, James R., Milton, N. Y.
 Clark, O. R., Higganum.
 Clinton, E. B., Clintonville.
 Clinton, Dr. George P., Experiment Station, New Haven.
 Clinton, Prof. L. A., Storrs.
 Coe, Ernest F., Edgewood avenue, New Haven.
 Coc, W. T., Northford.
 Coleman, M. L., Seymour.
 Coleman, M. P., South Coventry.
 Coles, John E., 109 Warren street, New York City.
 Colton, F. B., Hartford.
 Comstock, G. C., Norwalk.
 Cone, S. A., East Haddam.
 *Conn. Agricultural College, Storrs.
 Cook, Allen B., Farmington.
 Cook, George A., Willimantic.
 Cook, S. G., Branford.
 Cooke, Marcus E., Wallingford.
 Cornell, J. R., Newburg, N. Y.
 Crocker, E. W., East Hampton.
 Crowell, David A., Middletown.
 Curtis, Ellicott D., New York City, 62 William street.
 Curtis, H. B., Cheshire.
 Curtis, Newton M., Sandy Hook.
 Curtis, Robert W., Stratford.
 Dabney, H. D., New Britain, R. F. D., No. 2.
 Daniels, H. O., Middletown, Box 646.
 Dart, C. O., Rockville.
 Davis, A. B., Rockville.
 Davis, E., Branford.
 Davis, Edson G., Torrington.
 Davis, Henry B., Southbury.
 Davis, Mrs. A. B., Rockville.
 Dearden, Greenwood, Tolland.
 Deming, H. P., Robertsville.
 Dimon, J. J., Hartford.
 Donalds, E. J., Canaan, R. F. D.

*Life Member. †Deceased.

- Doolittle, Arthur H., Bethany.
 Doolittle, D. A., Bethany.
 Doolittle, S. B., Wallingford.
 Douglass, G. F., Collinsville.
 Drew, G. A., Greenwich.
 Driggs, Oliver K., Vernon.
 Duncan, R. R., Wethersfield.
 Dyer, E. W., Berlin.
 Eddy, J. C., Simsbury.
 Eddy, John S., Unionville.
 Ellison, E. W., Willimantic.
 Ellsworth, David J., Windsor.
 Ellsworth, E. J., Ellington, R. F. D.
 Elwood, J. F., Green Farms.
 Emerson, J. B., New York City, 20
 E. 30th street.
 Emmons, F. A., East Canaan.
 Ennis, Bertrand O., Highwood.
 Eno, Frank H., Simsbury.
 Ensign, F. Howard, Silver Lane.
 Evans, Archie J., Hockanum.
 Faber, W. A., Waterbury.
 Fagan, Joseph A., Forestville.
 Fairchild, H. L., Bridgeport, R. F.
 D. No. 4.
 Farnham, A. N., Westville.
 Fawthrop, Walter, Cromwell.
 Fay, John H., West Cheshire.
 Fenn, Dennis, Milford.
 Fenn, Robert M., Middlebury.
 Ferguson Bros., Philadelphia, Pa.,
 109 Chestnut street.
 Fisher, Willard, New York City, 81
 Fulton street.
 Flight, S. A., Highwood.
 Forbes, J. S., Burnside.
 †Ford, Dr. Wm. J., Washington.
 Foster, Sylvester M., Westport.
 Francis, D. G., West Hartford.
 Frederickson, Olaf P., South Co-
 ventry.
 French, W. H., Wolcott.
 French, Mrs. W. H., Wolcott.
 Frisbie, Martin M., Southington.
 Frost, Frank M., Yalesville.
 Frost, Fremont, Hartford.
 Frost, H. L., Boston, Mass., 6 Bea-
 con street.
 Frost, Willis E., Bridgewater.
 Fuller, Wm. H., West Hartford.
 Fullerton, H. B., Huntington, L. I.
 Gager, John M., Willimantic.
 Gardner, A. H., Meriden.
 Gardner, I. I., Meriden.
 Gardner, R. H., Cromwell.
 Garrigus, H. L., Storrs.
 Gaylord, E. W., Bristol.
 *Geer, Everett S., Hartford, 64 Niles
 street.
 Geer, Isaac G., Norwich, R. F. D.
 No. 6.
 Gehring, Fred, Rockville.
 Gelston, J. B., East Haddam.
 Gilbert, Henry, Middletown.
 Gilbert, Josiah, Wilton.
 Gilbert, Mrs. Orrin, Middletown.
 Gilbert, Orrin, Middletown.
 Gilbert, Thomas, Middletown.
 Gildersleeve, Henry, Gildersleeve.
 Gold, C. L., West Cornwall.
 Goldsborough, H. H., Eagleville, R.
 F. D.
 Gorton, Fred D., North Green, N. Y.
 Grasselli Chemical Co., The, New
 York, 60 Wall street.
 Gray, Chas. A., Norwich, R. F. D. 1.
 Gray, F. W., Waterbury.
 Gray, J. B., Norwich, R. F. D. 1.
 Gridley, E. D., Southington, R. F. D.
 Griffith, Geo. H., Bristol.
 Griswold, Chauncey, Farmington.
 Griswold, Henry H., Guilford.
 Griswold, H. O., West Hartford.
 Griswold, J. B., Newington.
 Griswold, R. S., Wethersfield.
 Griswold, S. A., West Hartford.
 Griswold, S. P., West Hartford.
 Griswold, Thomas & Co., South
 Wethersfield.
 Griswold, W. F., Rocky Hill.
 Groesbeck, F. O., Hartford.
 Goulds Mfg. Co., The, Sere-a Falls,
 N. Y.
 Guild, C. E., Hampton.
 Gulley, Prof. A. G., Storrs.
 Gulley & Warren, Rockville.
 Gunn, A. F., Woodbury, R. F. D.
 Hale, George, Westport.
 Hale, G. H., South Glastonbury.
 Hale, J. H., South Glastonbury.
 Hale, Stancliff, South Manchester.
 Hale, Wm. C., Willimantic.
 Haley, E., Mystic, R. F. D.
 Hall, Chas. H., Cheshire.
 Hall, Geo. B., Moodus.
 Hall, G. D., Wallingford.
 Hall, G. H., Manchester.

- Hall, N. C., Lyme.
 Hall, Wilbur H., Wallingford.
 Hamilton, H. L., Ellington.
 Hammer, V. T., Branford.
 Harrison, Orlando, Berlin, Md.
 Hart, E. S., New Britain.
 Hart, Mrs. S. A., Kensington.
 Healey, L. H., Woodstock.
 Hein, C. V., East Longmeadow, Mass.
 Henry, A. T., Wallingford.
 Hickox, Geo. H., Bethel.
 Higgins, Wm. L., M.D., South Coventry.
 Hilliard, H. J., Sound View.
 Hills, T. Morton, Willimantic.
 Hillyer, Appleton R., 91 Elm street, Hartford.
 Hillyer, Prof. H. W., Farmington.
 Hitchcock, A. L., Plainville.
 Hixon, Adin A., Worcester, Mass.
 Hollister, Geo. A., Hockanum.
 Hollister, Kirkland, South Glastonbury.
 Hollister, S. P., Storrs.
 Hopson, G. A., Wallingford.
 Hotchkiss, Chas. M., Cheshire.
 Hotchkiss, William, Bristol.
 Hough, E. J., Wallingford, R. F. D.
 Hough, George E., Wallingford, R. F. D.
 Hough, Joel R., Wallingford.
 Houston, J. R., Mansfield Depot.
 †Hoyt, Edwin, New Canaan.
 Hoyt, James, New Canaan.
 Hoyt, Stephen, New Canaan.
 Hubbard, Clement S., Higganum.
 Hubbard, Elmer S., Middletown.
 Hubbard, John B., Guilford.
 Hubbard, J. M., Middletown.
 Hubbard, Paul M., Bristol.
 Hubbard, Robert, Middletown.
 Hull, James, Durham.
 Hulme, Charles S., Thomaston, R. F. D.
 Hunt, W. W., Hartford.
 Hurlburt, Henry A., Jr., Wilton.
 Huss, J. F., Hartford.
 Innis, A. C., Ridgefield.
 Ives, E. M., Meriden.
 Ives, Mrs. E. M., Meriden.
 Ives, Miss Florence C., Meriden.
 Ives, Wm. B., Wallingford.
 Jackson, Elmer, Wilton.
 Jackson, J. C., Norwalk, R. F. D. No. 42.
 Jacobs, Arthur C., Mansfield Center.
 Jarvis, C. D., Storrs.
 Jenkins, Dr. E. H., Experiment Station, New Haven.
 Jennings, W. S., Fairfield, R. F. D. 9.
 Jennison, E. F., Hartford.
 Jerome, F. M., New Britain.
 Jewell, Harvey, Cromwell.
 Jewell, Mrs. Harvey, Cromwell.
 Johnson, C. B., Southbury.
 Johnson, Dr. F. E., Mansfield Depot.
 Jones, E. A., New Canaan.
 Kelley, Edward, New Canaan.
 Kellogg, Geo. A., West Hartford.
 Kelsey, Davis S., West Hartford.
 Kelsey, Frederick, Higganum.
 Kelsey, James H., Meriden.
 Kenney, J. P., Hockanum.
 Kilduff, P. J., Bristol, R. F. D.
 Killam, Edw., Thompsonville.
 Kingsbury, Addison, South Coventry.
 Kingsbury, Andrew, Rockville, R. F. D. No. 2.
 Kingsbury, John E., Rockville.
 King, Horace, Thompsonville.
 King, N. N., Suffield, R. F. D.
 Kirkham, John S., Newington.
 Knowles, Wm. A., Middletown.
 Knoxhall, J., Hockanum.
 Lamson, G. H., Storrs.
 Lane, Willis A., New Britain.
 Lapsley, Arthur B., Pomfret Center.
 Laurenson, Robert, Eagleville.
 Lay, Chas. H., East Longmeadow, Mass.
 Lee, Wilson H., Orange.
 Lewis, H. D., Red Hook, N. Y.
 Lewis, Fred J., Highwood.
 Loomis, John, South Manchester.
 Loverin, D. P., Huntington.
 Lowrey, H. P., Whigville.
 Lowrey, L. L., Bristol.
 Ludlum, H. A., Wolcott.
 Lyman, C. E., Middlefield.
 Lynch, Wallace, Storrs.
 Mack, H. H., East Haddam.
 Mallon, James, Rockville, 8 Spruce street.
 Manchester, E., Bristol.
 Manchester, E. F., Bristol.
 Manchester, George C., Bristol.
 Manchester, H. G., Winsted.

- Mansfield, Peter, West Hartford.
 Marshall, Joseph, Seymour.
 Martin, J. A., Wallingford.
 Martin, W. B., Rockville.
 Maxwell, W., Rockville.
 May, Otto, Glastonbury.
 May, W. B., Hartford.
 McCormack, Samuel, Waterbury,
 1063 North Main street.
 McKay, W. L., Geneva, N. Y.
 McLean, John B., Simsbury.
 McLean, S. G., South Glastonbury.
 Mead, Seaman, Greenwich.
 Merriman, E., South Coventry.
 Merriman, J. H., Southington.
 Merwin, A. H., Durham.
 Merwin, Asaph M., Durham.
 Miles, H. C. C., Milford.
 Miller, C. H., Berlin.
 Miller, E. Cyrus, Haydenville, Mass.
 Miller, F. B., Bloomfield.
 Mills, D. E., Bristol.
 Mills, Geo. E., Farmington.
 Minor, Geo. N., Bristol.
 Mitchell, Wallace N., Newtown.
 Mitchell, W. L., New Haven, 1505
 Chapel street.
 Molumphy, J. T., Berlin.
 Montague, H. E., 109 Warren street,
 New York City.
 Moore, E. A., New Britain.
 Morton, E. G., East Windsor.
 Morris, Chas. G., New Haven, Box
 1352.
 Morris, F. S., Wethersfield.
 Moses, A. A., Unionville.
 Mosley, A. W., Glastonbury.
 Munson, E. W., New Haven, 986
 Dixwell avenue.
 Munson, Rev. Myron A., West Hart-
 ford.
 Munson, W. M., Huntington, Mass.
 Moss, J. W., West Cheshire.
 Moss, Julius, West Cheshire.
 Mudge, E. P., New Canaan.
 Mueller, C. J., Berlin.
 Munson, R. A., Highwood, Station 4.
 Newton, J. P., Saybrook.
 Newton, Robertson & Co., Hartford.
 Nickerson & Collins Co., Chicago,
 Ill.
 Noble, H. C., New Britain.
 Norton, A. F., New Britain.
 Olcott, W. H., South Manchester.
 Ott, Fred, Cheshire, R. F. D.
 Paddock, J. H., Wallingford, East
 Main street.
 Page, B. F., Northford, R. F. D.
 Parker, G. A., Hartford.
 Parker, John B., Jr., Poquonock.
 Parmelee, Dr. Geo. L., 65 Pratt
 street, Hartford.
 Patch, A. Warren, Boston, Mass.
 Patten, D. W., Clintonville.
 Patterson, B. C., Torrington.
 Pauley, Geo. A., New Canaan.
 Paulson, Mrs. A. E., West Hartford.
 Payne, Frank C., Portland.
 Payne, Lymen, Portland.
 Pease, C. P., Ellington.
 Peasley, Fredk. M., Waterbury.
 Peck, B. A., Bristol.
 Pero, Louis, South Glastonbury.
 Perry, Chas. M., Southbury.
 Peters, Henry D., Highwood.
 Phelps, Chas. S., Chapinville.
 Phelps, E. J., Enfield.
 Phelps, Mrs. E. J., Enfield.
 Philips, Alan, Farmington.
 Pierce, Mrs. I. E., Bristol.
 Pierpont, A. B., Waterbury.
 Pierpont, A. J., Waterbury.
 Pierpont, W. L., Waterbury.
 Pitkin, A. L., Talcottville.
 Plant, A. B., Branford.
 Plant, Albert E., Branford.
 Platt, Frank N., Milford.
 Platt, G. E., Milford.
 Platt, N. D., Milford.
 Platt, N. S., 395 Whalley avenue,
 New Haven.
 Platt, William F., Milford.
 Pomeroy, C. B., Jr., Willimantic.
 Pomeroy, E., Windsor.
 Pope, W. J., Waterbury.
 Porter, Marshall, Hebron.
 Potter, H. E., North Haven.
 Potter, H. W., Glastonbury.
 Powell, E. C., Springfield, Mass.
 Pratt, B. G., 11 Broadway, New
 York City.
 Price, Walter E., Warehouse Point.
 Pring, Thos. J., Wallingford.
 Putnam, J. H., Litchfield.
 Race, R. H., North Egremont,
 Mass.
 Rand, Mrs. P. C., Meriden.
 Rathburn, Norris W., East Haddam.
 Rhodes, R. H., Rocky Hill.
 Rice, J. L., Ludlow, Mass., R. F. D.
 Ripley, Louis A., Litchfield.

- Risley, C. H., Berlin.
 Roberts, C. S., Riverton.
 Roberts, Earl C., Middletown, R. F.
 D. No. 2.
 Roberts, E. J., Middletown.
 Roberts, Horace, Moorestown, N. J.
 Robertson, L. J., Manchester Green.
 Robinson, W. C., Columbia.
 Rogers, E., Southington, R. D.
 Rogers, F. D., Monson, Mass.
 Rogers, James, Simsbury.
 Rooke, J. R., Bloomfield.
 Root, L. C., Farmington.
 Root, T. H., Farmington.
 Russell, Dr. Gurdon W., Hartford.
 Russell, S., Jr., Middletown.
 Sanderson, Lucien, New Haven.
 Savage, Clarence H., Storrs.
 Savage, Theo. M., Berlin.
 Savage, Willis I., Berlin.
 Schmidt, E., New Canaan.
 Schneider, Herman, New Canaan,
 Box 260.
 Schwink, J. G., Jr., Meriden.
 Schultz, W. F. & Co., Hartford.
 Segur, Dr. G. C., Hartford.
 Seibert, Philip, Berlin, R. F. D.
 Shedd, G. V., Preston.
 Sheldon, F. J., Enfield.
 Shepardson, W. M., Middlebury.
 *Shepperd, W. S., Shaker Station.
 Sherwood, N. H., Southport.
 Silliman, J. F., New Canaan.
 Simon, C. H., 18 Natalie street,
 Hartford.
 Simpson, W. A., Wallingford.
 Skinner, M. G., Higganum.
 Slater, Geo. H., Glastonbury, R. F.
 D.
 Smart, Geo. W., Silver Lane.
 Smith, Clifford T., Litchfield.
 Smith, J. H., Hartford, 249 Fairfield
 avenue.
 Smith, Datus C., 55 East 76th street,
 New York, N. Y.
 Smith, Geo. V., New Haven, 69
 Church street.
 Smith, G. W., Hartford, Box 38.
 Smith, H. P., North Haven.
 Smith, Joseph, West Cheshire.
 Smith, Dr. L. A., Higganum.
 Spicer, G. W., Deep River.
 Spletstoecker, Herman, New Britain.
 R. F. D. No. 2.
 Staples, G. W., Hartford.
 Steele, Chas. E., New Britain, Box
 702.
 Steele, G. W., Newington.
 Steere, Sayles B., Chepachet, R. I.
 Sternberg, A. C., West Hartford.
 Sternberg, A. C., Jr., West Hartford.
 Stevens, A. T., Storrs.
 Stevens, H. C., East Canaan.
 Stimson, Rufus W., Storrs.
 Stirling, J. C., Rockville.
 St. John, D. A., New Canaan.
 Stocking, W. A. & Son, Weatogue.
 Stockwell, S. T., West Simsbury.
 Stone, D. E., Cheshire.
 Stoughton, Lemuel, Warehouse
 Point.
 Strumpf, George, Burnside.
 Stuart, E. J., West Hartford.
 Taber, F. J., South Windham.
 *Talcott, Phineas, Rockville, Box
 1166.
 Tanner, John E., Moosup, R. F. D.
 No. 1.
 Tanner, Walter C., Voluntown.
 Taylor, C. G., New Canaan.
 Taylor, Edward J., Southport.
 Taylor, J. M., Kensington.
 Teachman, S. B., Farmington.
 Terrill, Chas. T., North Woodbury.
 The Vreeland Chemical Co., Little
 Falls, N. J.
 Thomas, W. S., Groton.
 Thompson, Chas. A., Melrose.
 Thompson, Chas. B., Moodus.
 Thomson, Henry M., Thompson.
 Thomson, Paul, West Hartford.
 Tillinghast, G. G., Vernon.
 Titus, Ellwood V., Glen Cove, L. I.,
 N. Y.
 Todd, E. A., Waterbury, R. F. D.
 Trask, Abner, Silver Lane.
 Treadwell, G. B., Storrs.
 Tucker, F. E., Vernon.
 Turney, Oliver, Fairfield.
 Tuttle, S. L., Wallingford.
 Tyler, W. M., Waterbury.
 Usher, R. C., Plainville.
 Vibberts, L. A., New Britain.
 Viets, R. B., New Britain.
 Vine Hill Farm, Elmwood.
 Von Herff, B., New York, 93 Nas-
 sau street.
 Wakelee, G. M., Shelton.

*Life Member.

- Wakeman, H. S., Saugatuck.
 Wakeman, S. B., Saugatuck.
 Walden, B. H., Experiment Station,
 New Haven.
 Waldo, Harold B., Naubuc.
 Wallace, E. J., Wallingford, West
 Quinnipiac street.
 Waller, W. E., R. D., Chestnut Hill,
 Bridgeport.
 Wiard, W. S., Yalesville.
 Warncke, Louis H., Cannon Station.
 Warner, E. C., Clintonville.
 Warren, Fred, Willimantic, R. F. D.
 Warren, W. J., Gilead.
 Watrous, J. L., Meriden.
 Watson, John, Rockville, R. F. D.
 Way, C. Daniel, Gilead.
 Weed, T. L., New Britain.
 Welch, G. H., Torrington.
 Wells, Dudley, Wethersfield.
 Wells, Dudley, 2d, Wethersfield.
 Wells, W. W., South Woodstock.
 West, S. B., Columbia.
 Whitney, Howard R., Southington,
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 Wilcox, R. C. & Sons, Guilford.
 Wilder, F. W., Watertown.
 Wiley, Clarence H., Hartford, 122
 Collins street.
 Willard, Arthur C., Wethersfield.
 Willard, S. F., Wethersfield.
 Williams, A. W., New Britain.
 Williams, F. B., Naugatuck.
 Williams, Miss L. S., Hartford, 1492
 Broad street.
 Wills, H. H., Vernon Center.
 Winsor, Thos. K., Greenville, R. I.
 Wolcott, R. R., Wethersfield.
 Wood, G. P., Ellington.
 Wood, O. S., Ellington.
 Woodhouse, S. N., Wethersfield.
 Woodruff, Dwight, Plymouth.
 Woodruff, R. H., Guilford.
 Wooster, Charles R., Chester.
 Wooster, R. H., Southbury, R. F.
 D. No. 2.
 Wooster, W. A., New Britain, 92
 Black Rock Road.
 Woody, C. A., Boulder, Colo.
 Wright, John L., Middletown, 342
 Main street.
 Wright, W. O., Clinton.
 Yale, Allan R., Meriden.
 Yarrington, Chas., Seymour.
 Yerrington, Theodore W., Norwich.
 Young, C. A., Yalesville.

